HA2PC S.Hogan

Final Exam (PC) Review—Partial Fractions Practice

There will be 85 multiple-choice questions and one, 25-point, free-response (on partial fractions.) However, your exam will only be counted out of 100 points, meaning that it is possible to earn a 110%.

You will have one free-response problem on your final examination. It will be a partial fractions problem like the ones listed below. Complete this worksheet at practice for the final examination.

Examples can be seen on pp.179-182 in your textbook. Examples 1 to 4 explain how to deal with different types of factors in the denominator.

Review Problems: Write the partial fraction decomposition for each.

1. $\dfrac{7}{x^2 - 14x}$

2. $\dfrac{x-2}{x^2 + 4x + 3}$

3. $\dfrac{x+4}{x^2(3x-1)^2}$

4. $\dfrac{5}{x^2 + x - 6}$

5. $\dfrac{2x^2 + x + 8}{(x^2 + 4)^2}$

6. $\dfrac{4x^2 + 2x - 1}{x^2(x+1)}$

7. $\dfrac{x}{x^3 - x^2 - 2x + 2}$

8. $\dfrac{x^2 + 5}{(x+1)(x^2 - 2x + 3)}$

9. $\dfrac{x}{16x^4 - 1}$

10. $\dfrac{x^4}{(x-1)^3}$

Name_____

Your final exam will be identical in format to this review. Only the actual values in the questions will vary.

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Determine the equation of the line described. Put answer in the slope–intercept form, if possible.

1) Through (6, 9), perpendicular to $-2x - 7y = -75$ 1) _____

A) $y = \frac{7}{2}x - 12$ B) $y = \frac{2}{7}x - 24$ C) $y = -\frac{7}{2}x + 12$ D) $y = \frac{7}{2}x$

2) Through (3, 7), parallel to $5x + 9y = 87$ 2) _____

A) $y = \frac{5}{9}x - \frac{26}{3}$ B) $y = -\frac{5}{9}x + \frac{26}{3}$

C) $y = -\frac{9}{5}x + \frac{7}{5}$ D) $y = -\frac{1}{3}x + \frac{29}{3}$

Solve the problem.

3) Assume that the sales of a certain appliance dealer are approximated by a linear function. Suppose that sales were \$11,000 in 1982 and \$83,000 in 1987. Let $x = 0$ represent 1982. Find the equation giving yearly sales S(x). 3) _____

A) $S(x) = 72{,}000x + 11{,}000$ B) $S(x) = 14{,}400x + 11{,}000$

C) $S(x) = 72{,}000x + 83{,}000$ D) $S(x) = 14{,}400x + 83{,}000$

Solve the equation by factoring.

4) $x^2 - x = 72$ 4) _____

A) $x = 8$ or $x = 9$ B) $x = -8$ or $x = 9$

C) $x = -8$ or $x = -9$ D) $x = 1$ or $x = 72$

5) $20x^2 + 23x - 5 = -11$ 5) _____

A) $x = -\frac{5}{2}$ or $x = -\frac{3}{4}$ B) $x = \frac{2}{5}$ or $x = \frac{3}{4}$

C) $x = \frac{5}{2}$ or $x = \frac{4}{3}$ D) $x = -\frac{2}{5}$ or $x = -\frac{3}{4}$

Solve the equation using the quadratic formula.

6) $2x^2 + 6x + 2 = 0$ 6) _____

A) $x = \frac{-3 + \sqrt{5}}{2}$ or $x = \frac{-3 - \sqrt{5}}{2}$ B) $x = \frac{-3 + \sqrt{5}}{4}$ or $x = \frac{-3 - \sqrt{5}}{4}$

C) $x = \frac{-6 + \sqrt{5}}{2}$ or $x = \frac{-6 - \sqrt{5}}{2}$ D) $x = \frac{-3 + \sqrt{13}}{2}$ or $x = \frac{-3 - \sqrt{13}}{2}$

Solve the problem.

7) The length of a rectangle is three inches more than the width. The area of the rectangle is 378 inches. Find the width of the rectangle. 7) _____

A) 9 inches B) 21 inches C) 18 inches D) 11 inches

8) A rock falls from a tower that is 272 ft high. As it is falling, its height is given by the formula $h = 272 - 16t^2$. How many seconds will it take for the rock to hit the ground (h=0)? 8) _____

A) 4.1 s B) 4624 s C) 16.5 s D) 16 s

Find the domain of the given function.

9) $f(x) = \sqrt{9 - x}$ 9) _____

A) All real numbers B) $(\sqrt{9}, \infty)$

C) $(-\infty, 9) \cup (9, \infty)$ D) $(-\infty, 9]$

10) $f(x) = \dfrac{x}{x - 4}$ 10) _____

A) $(-\infty, -4) \cup (-4, \infty)$ B) $(0, \infty)$

C) $(-\infty, 4) \cup (4, \infty)$ D) All real numbers

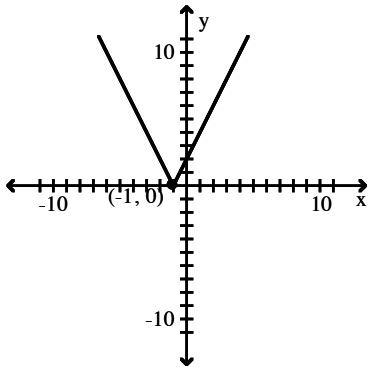
11) $f(x) = \dfrac{\sqrt{x + 3}}{(x + 9)(x - 6)}$ 11) _____

A) $(0, \infty)$ B) $[-3, 6) \cup (6, \infty)$

C) $(-\infty, -9) \cup (-9\ -3) \cup (-3, 6) \cup (6, \infty)$ D) All real numbers

Determine the intervals on which the function is increasing, decreasing, and constant.

12) 12) _____



A) Increasing on $(1, \infty)$; Decreasing on $(-\infty, 1)$

B) Increasing on $(-\infty, 1)$; Decreasing on $(1, \infty)$

C) Increasing on $(-\infty, -1)$; Decreasing on $(-1, \infty)$

D) Increasing on $(-1, \infty)$; Decreasing on $(-\infty, -1)$

Determine algebraically whether the function is even, odd, or neither even nor odd.

13) $f(x) = 2x^2 - 4$ 13) _____

A) Neither B) Even C) Odd

Solve the problem.

14) Estimate graphically the local maximum and local minimum of $f(x) = \frac{1}{3}x^3 + x^2 - 3x$. 14) _____

A) Local maximum: 8.53; local minimum: –2.01
B) Local maximum: 1.67; local minimum: –9
C) Local maximum: 9; local minimum: –1.67
D) Local maximum: 9; local minimum: 1.06

Find the asymptote(s) of the given function.

15) $h(x) = \frac{15x^2}{5x^2 - 5}$ horizontal asymptotes(s) 15) _____

A) None B) $y = 5$ C) $y = \sqrt{5}$ D) $y = 3$

16) $f(x) = \frac{x - 1}{x^2 + 4x}$ vertical asymptotes(s) 16) _____

A) $x = -4$ B) $x = 1$ C) $x = 0, x = -4$ D) $x = 4$

Perform the requested operation or operations.

17) $f(x) = \sqrt{x + 5}$; $g(x) = 8x - 9$ 17) _____
Find f(g(x)).
A) $f(g(x)) = 8\sqrt{x - 4}$ B) $f(g(x)) = 8\sqrt{x + 5} - 9$
C) $f(g(x)) = 2\sqrt{2x + 1}$ D) $f(g(x)) = 2\sqrt{2x - 1}$

Find the (x,y) pair for the value of the parameter.

18) $x = t^3 - 5t$ and $y = \sqrt{t - 1}$ for $t = 1$ 18) _____
A) (0, –4) B) (6, 0) C) (0, 6) D) (–4, 0)

Divide f(x) by d(x), and write a summary statement in the form indicated.

19) $f(x) = x^2 - 2x + 5$; $d(x) = x - 6$ (Write answer in fractional form) 19) _____

A) $\frac{f(x)}{(x - 6)} = (x + 4) + \frac{24}{(x - 6)}$ B) $\frac{f(x)}{(x - 6)} = (x - 6) + \frac{29}{(x - 6)}$

C) $\frac{f(x)}{(x - 6)} = (x - 6) + \frac{24}{(x - 6)}$ D) $\frac{f(x)}{(x - 6)} = (x + 4) + \frac{29}{(x - 6)}$

Divide using synthetic division, and write a summary statement in fraction form.

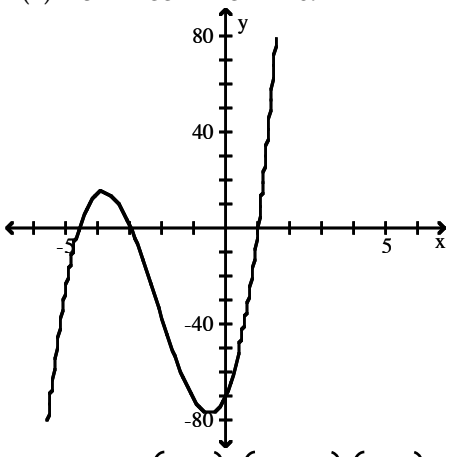
20) $\frac{2x^3 + 3x^2 + 4x - 10}{x + 1}$ 20) _____

A) $2x^2 + 5x + 9 + \frac{1}{x + 1}$ B) $2x^2 + x + 3 + \frac{13}{x + 1}$

C) $2x^2 + x + 3 + \frac{-13}{x + 1}$ D) $2x^2 + 5x + 9 + \frac{-1}{x + 1}$

Use the graph to guess possible linear factors of f(x). Then completely factor f(x) with the aid of synthetic division.

21) $f(x) = 5x^3 + 33x^2 + 31x - 69$ 21) _____



A) $f(x) = (x - 3)(5x - 23)(x + 1)$
B) $f(x) = (x + 3)(5x + 23)(x - 1)$
C) $f(x) = (x - 3)(5x - 21)(x + 1)$
D) $f(x) = (x + 3)(7x + 31)(x - 1)$

Rewrite the expression as a sum or difference or multiple of logarithms.

22) $\log_{20}\left(\frac{9\sqrt{r}}{s}\right)$ 22) _____

A) $\log_{20}(9\sqrt{r}) - \log_{20} s$
B) $\log_{20} 9 + \frac{1}{2}\log_{20} r - \log_{20} s$
C) $\log_{20} s - \log_{20} 9 - \frac{1}{2}\log_{20} r$
D) $\log_{20} 9 \cdot \frac{1}{2}\log_{20} r \div \log_{20} s$

Write the expression using only the indicated logarithms.

23) $\log_6 x$ using natural logarithms 23) _____

A) $\frac{\ln x}{\ln 6}$
B) $\ln x + \ln 6$
C) $\ln x \cdot \ln 6$
D) $\frac{\ln 6}{\ln x}$

Find the domain of the function.

24) $f(x) = \log_3 (9 - x^2)$ 24) _____

A) $[-3, 3]$
B) $(-3, 3)$
C) $(-9, 9)$
D) $(-\infty, -3) \cup (3, \infty)$

Solve the equation.

25) $\log (x - 9) = 1 - \log x$ 25) _____

A) $-1, 10$
B) -10
C) $-10, 1$
D) 10

26) $\log_4(2x + 5) - \log_4(x - 2) = 1$ 26) _____

A) 3.125
B) 2.408
C) 6.5
D) No solution

Convert from degrees to radians. Use the value of π found on a calculator and round answers to four decimal places, as needed.

27) 45° 27) _____

A) $\frac{\pi}{4}$ B) $\frac{\pi}{6}$ C) $\frac{\pi}{3}$ D) $\frac{\pi}{5}$

28) 65.15° 28) _____

A) 0.5685 B) 1.1371 C) 0.7581 D) 0.3619

Convert the radian measure to degree measure. Use the value of π found on a calculator and round answers to two decimal places.

29) $\frac{9\pi}{6}$ 29) _____

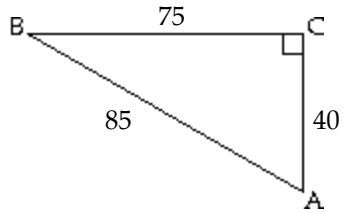
A) 270° B) 160° C) 540° D) 120π°

30) 0.3 30) _____

A) 17.19° B) 16.49° C) 18.19° D) 17.69°

Find the exact values of the indicated trigonometric functions. Write fractions in lowest terms.

31) 31) _____



Find sec A and csc A.

A) sec A = $\frac{8}{17}$; csc A = $\frac{15}{17}$ B) sec A = $\frac{17}{15}$; csc A = $\frac{17}{8}$

C) sec A = $\frac{17}{8}$; csc A = $\frac{17}{15}$ D) sec A = $\frac{15}{8}$; csc A = $\frac{8}{15}$

Assume that θ is an acute angle in a right triangle satisfying the given conditions. Evaluate the indicated trigonometric function.

32) cos θ = $\frac{3}{4}$; tan θ 32) _____

A) $\frac{4}{3}$ B) $\frac{\sqrt{7}}{4}$ C) $\frac{3}{\sqrt{7}}$ D) $\frac{\sqrt{7}}{3}$

Give the exact value.

33) tan $\frac{\pi}{6}$ 33) _____

A) $\frac{\sqrt{3}}{3}$ B) $\sqrt{3}$ C) 1 D) $\frac{\sqrt{3}}{2}$

34) sec 60° 34) _____

A) 2 B) $\sqrt{2}$ C) $\frac{\sqrt{3}}{2}$ D) $\frac{2\sqrt{3}}{3}$

Solve the equation.

35) Solve $\sin\theta = \frac{1}{2}$ for θ, where $0° \le \theta \le 90°$. 35) _____

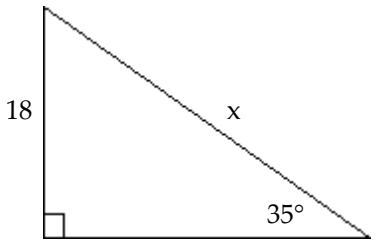
A) 90° B) 60° C) 45° D) 30°

36) Solve $\tan\theta = \sqrt{3}$ for θ, where $0° \le \theta \le 90°$. 36) _____

A) 45° B) 30° C) 90° D) 60°

Solve for x. Round your answer to 2 decimal places.

37) 37) _____



A) 21.97 B) 31.38 C) 14.74 D) 10.32

Solve the problem.

38) From a distance of 50 feet from the base of a building, the angle of elevation to the top of the building is 66°. Estimate the height of the building to the nearest foot. 38) _____

A) 112 feet B) 22 feet C) 46 feet D) 20 feet

Give the exact value.

39) cot 300° 39) _____

A) –1 B) $-\sqrt{3}$ C) $\frac{\sqrt{3}}{3}$ D) $-\frac{\sqrt{3}}{3}$

Evaluate without using a calculator by using ratios in a reference triangle.

40) $\sec\frac{3\pi}{4}$ 40) _____

A) $-\frac{2\sqrt{3}}{3}$ B) –1 C) $-\sqrt{2}$ D) $-\frac{\sqrt{3}}{2}$

Evaluate without using a calculator.

41) $\sin\theta$, if $\cos\theta = \frac{2}{9}$ and $\tan\theta < 0$ 41) _____

A) $-\frac{\sqrt{77}}{2}$ B) $-\frac{\sqrt{77}}{9}$ C) $-\frac{9}{2}$ D) $-\sqrt{77}$

42) sin α, if cot $\alpha = 9$ and sec $\alpha < 0$ 42) _____

A) $-\sqrt{82}$ B) $\frac{\sqrt{82}}{82}$ C) $-\frac{9\sqrt{82}}{82}$ D) $-\frac{\sqrt{82}}{82}$

Find the period of the function.

43) $y = \sin 5x$ 43) _____

A) 1 B) $\frac{2\pi}{5}$ C) 2π D) 5

Find the amplitude of the function.

44) $y = 5 \sin 4x$ 44) _____

A) 5 B) $\frac{5}{4}$ C) $\frac{\pi}{5}$ D) $\frac{\pi}{4}$

Find the zeros of the function in the interval $[-2\pi, 2\pi]$.

45) $f(x) = 3 \cos x$ 45) _____

A) $0, \pm\frac{\pi}{2}, \pm\frac{3\pi}{2}$ B) $\pm\frac{\pi}{2}, \pm\pi, \pm\frac{3\pi}{2}, \pm 2\pi$

C) $0, \pm\pi, \pm 2\pi$ D) $\pm\frac{\pi}{2}, \pm\frac{3\pi}{2}$

46) $f(x) = -4 \sin 2x$ 46) _____

A) $0, \pm\pi, \pm 2\pi$ B) $\pm\frac{\pi}{4}, \pm\frac{3\pi}{4}, \pm\frac{5\pi}{4}, \pm\frac{7\pi}{4}$

C) $0, \pm\frac{\pi}{2}, \pm\pi, \pm\frac{3\pi}{2}, \pm 2\pi$ D) $\pm\frac{\pi}{2}, \pm\frac{3\pi}{2}$

Solve the problem.

47) When sitting atop a tree and looking down at his pal Joey, the angle of depression of Mack's line of sight is 55°2'. If Joey is known to be standing 34 feet from the base of the tree, how tall is the tree (to the nearest foot)? 47) _____

A) 53 ft B) 51 ft C) 55 ft D) 49 ft

48) On a sunny day, a flag pole and its shadow form the sides of a right triangle. If the hypotenuse is 40 m long and the shadow is 32 m, how tall is the flag pole? 48) _____

A) 64 m B) 24 m C) 51 m D) 72 m

49) A fire is sighted due west of lookout A. The bearing of the fire from lookout B, 10.3 miles due south of A, is N 58.72°W. How far is the fire from B (to the nearest tenth of a mile)? 49) _____

A) 22.8 mi B) 21.8 mi C) 20.8 mi D) 19.8 mi

Use basic identities to simplify the expression.

50) $\cot\theta \sec\theta \sin\theta$ 50) _____

A) $\sec^2\theta$ B) 1 C) $\tan^2\theta$ D) $\csc^2\theta$

51) $\cos\theta - \cos\theta \sin^2\theta$ 51) _____

A) $\sec^2\theta$ B) $\tan^2\theta$ C) $\sin\theta$ D) $\cos^3\theta$

Simplify the expression.

52) $\sin(-x)\csc x$ 52) _____

A) $-\cot x$ B) $-\tan x$ C) -1 D) 1

53) $\dfrac{1}{1-\cos x} + \dfrac{1}{1+\cos x}$ 53) _____

A) $2\csc x$ B) $\csc 2x$ C) $2\csc 2x$ D) $2\sec 2x$

Write each expression in factored form as an algebraic expression of a single trigonometric function.

54) $1 - 2\sin^2 x + \sin^4 x$ 54) _____

A) $(1 - \sin^2 x)$ B) $\sin^2 x$ C) $(1 + \tan^2 x)$ D) $\cos^4 x$

Find all solutions in the interval [0, 2π).

55) $2\sin^2 x = \sin x$ 55) _____

A) $x = \frac{\pi}{2}, \frac{3\pi}{2}, \frac{\pi}{3}, \frac{2\pi}{3}$ B) $x = \frac{\pi}{3}, \frac{2\pi}{3}$

C) $x = \frac{\pi}{6}, \frac{5\pi}{6}$ D) $x = 0, \pi, \frac{\pi}{6}, \frac{5\pi}{6}$

56) $7\tan 3x - 21\tan x = 0$ 56) _____

A) $0, \frac{\pi}{3}, \frac{2\pi}{3}, \pi, \frac{4\pi}{3}, \frac{5\pi}{3}$ B) $0, \frac{\pi}{5}, \pi, \frac{6\pi}{5}$

C) $\frac{\pi}{3}, \frac{2\pi}{3}, \frac{4\pi}{3}, \frac{5\pi}{3}$ D) $0, \frac{\pi}{3}, \pi, \frac{4\pi}{3}$

Find an exact value.

57) $\sin 15°$ 57) _____

A) $\dfrac{-\sqrt{6}-\sqrt{2}}{4}$ B) $\dfrac{\sqrt{6}-\sqrt{2}}{4}$ C) $\dfrac{-\sqrt{6}+\sqrt{2}}{4}$ D) $\dfrac{\sqrt{6}+\sqrt{2}}{4}$

Find all solutions to the equation in the interval [0, 2π).

58) $\cos x = \sin 2x$ 58) _____

A) $0, \pi$ B) $\frac{\pi}{6}, \frac{\pi}{2}, \frac{5\pi}{6}, \frac{3\pi}{2}$

C) $\frac{\pi}{2}, \frac{3\pi}{2}$ D) $0, \frac{\pi}{6}, \frac{5\pi}{6}, \pi$

Solve the triangle.

59) $A = 39°, B = 28°, b = 9$ 59) _____

A) $C = 113°, a \approx 6.7, c \approx 13.2$ B) $C = 23°, a \approx 6.7, c \approx 13.2$

C) $C = 113°, a \approx 6.7, c \approx 17.6$ D) $C = 113°, a \approx 12, c \approx 17.6$

Solve.

60) Two tracking stations are on the equator 128 miles apart. A weather balloon is located on a bearing of N 41°E from the western station and on a bearing of N 15°E from the eastern station. How far is the balloon from the western station? 60) _____

A) 242 miles B) 233 miles C) 291 miles D) 282 miles

Solve the triangle.

61) A = 54°, b = 14, c = 8 61) _____

A) a ≈ 15.9, C ≈ 38.6, B ≈ 87.4 B) a ≈ 15.9, C ≈ 34.6, B ≈ 91.4

C) No triangles possible D) a ≈ 11.3, C ≈ 34.6, B ≈ 91.4

Solve the problem.

62) Two factories blow their whistles at exactly the same time. If a man hears the two blasts exactly 7.9 seconds and 7.4 seconds after they are blown and the angle between his lines of sight to the two factories is 37.3°, how far apart are the factories? Give your result to the nearest meter. (Use the fact that sound travels at 344 m/sec.) 62) _____

A) 4987 meters B) 2892 meters C) 1691 meters D) 4401 meters

63) An airplane leaves an airport and flies due west 140 miles and then 200 miles in the direction S 49.33°W. How far is the plane from the airport at this time (to the nearest mile)? 63) _____

A) 319 mi B) 309 mi C) 289 mi D) 299 mi

Find $\mathbf{a} \cdot \mathbf{b}$.

64) $\mathbf{a} = \langle 5, 1 \rangle$, $\mathbf{b} = \langle 3, 5 \rangle$ 64) _____

A) −10 B) $\langle 15, 5 \rangle$ C) 20 D) $\langle 8, 6 \rangle$

Find the component form of the indicated vector.

65) Let $\mathbf{u} = \langle 8, -8 \rangle$, $\mathbf{v} = \langle -2, -7 \rangle$. Find $\mathbf{u} - \mathbf{v}$. 65) _____

A) $\langle 6, -15 \rangle$ B) $\langle 16, 5 \rangle$ C) $\langle 10, -1 \rangle$ D) $\langle 15, -6 \rangle$

66) Let $\mathbf{u} = \langle 1, -4 \rangle$, $\mathbf{v} = \langle -6, -5 \rangle$. Find $5\mathbf{u} + 4\mathbf{v}$. 66) _____

A) $\langle 29, 0 \rangle$ B) $\langle -25, -45 \rangle$ C) $\langle -19, -9 \rangle$ D) $\langle -19, -40 \rangle$

Eliminate the parameter.

67) $x = \sin t$, $y = 3 \cos t$ 67) _____

A) $x^2 + 9y^2 = 1$ B) $9x^2 + y^2 = 9$ C) $9x^2 + y^2 = 1$ D) $x^2 + 9y^2 = 9$

68) $x = \frac{1}{3}t$, $y = 3t^3 - 7$ 68) _____

A) $y = \frac{1}{9}t^3 - 7$ B) $y = 9x^3 - 7$ C) $y = 81x - 7$ D) $y = 81x^3 - 7$

Find the rectangular coordinates of the point with the given polar coordinates.

69) $\left(-2, \frac{3}{2}\pi\right)$ 69) _____

A) (2, 0) B) (−2, 0) C) (0, 2) D) (0, −2)

70) (3, $5\pi/3$) 70) _____

A) $\left(\frac{3}{2}, \frac{-3\sqrt{3}}{2}\right)$ B) $\left(\frac{-3}{2}, \frac{3}{2}\right)$ C) $\left(\frac{3}{2}, \frac{-3}{2}\right)$ D) $\left(\frac{-3\sqrt{3}}{2}, \frac{3}{2}\right)$

Find an equivalent equation in polar coordinates.

71) $y = x$ 71) _____

A) $r = \cos\theta$ B) $\sin\theta = -\cos\theta$ C) $r = \sin\theta$ D) $\sin\theta = \cos\theta$

72) $x^2 - y^2 = 4$ 72) _____

A) $r\cos 2\theta = 4$ B) $\cos^2\theta - \sin^2\theta = 4r$

C) $\cos^2\theta - \sin^2\theta = 4$ D) $r^2\cos 2\theta = 4$

Find an equivalent equation in rectangular coordinates.

73) $r = \frac{4}{6\sin\theta + 5\cos\theta}$ 73) _____

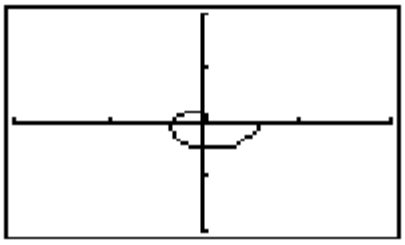
A) $6y + 5x = \frac{4}{\sqrt{x^2 + y^2}}$ B) $6x - 5y = 16$

C) $6x + 5y = 4$ D) $6y + 5x = 4$

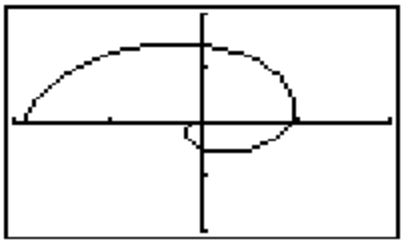
With your calculator set to radian mode and polar graphics capability, graph the following function in the window specified.

74) $r = 3\theta$, $0 \le \theta \le 2\pi$, $[-20, 20]$ by $[-20, 20]$ 74) _____

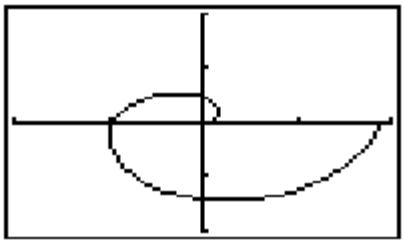
A)



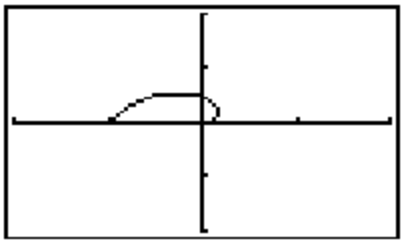
B)



C)



D)



Find the coefficient of the given term in the binomial expansion.

75) x^7y^4 term, $(x + y)^{11}$ 75) _____

A) 237,600 B) 7 C) 1,663,200 D) 330

Expand the binomial.

76) $(4x + 2)^5$ 76) _____

A) $(16x^2 + 16x + 4)^5$

B) $1024x^5 + 2560x^4 + 2560x^3 + 1280x^2 + 320x + 32$

C) $1024x^5 + 320x^4 + 1280x^3 + 1280x^2 + 320x + 32$

D) $1024x^5 + 512x^4 + 256x^3 + 128x^2 + 64x + 32$

Find the sum of the first n terms of the sequence.

77) 6, 1, −4, −9, ... ; n = 9 77) _____

A) $-\frac{297}{2}$ B) − 165 C) − 153 D) − 126

78) −4, 8, −16, ... ; n = 11 78) _____

A) 5460 B) − 1365 C) − 16380 D) − 2732

Find the center, vertices, and foci of the ellipse with the given equation.

79) $\frac{(x-4)^2}{625} + \frac{(y-1)^2}{400} = 1$ 79) _____

A) Center: (4, 1); Vertices: (−21, 1), (29, 1); Foci: (−11, 1), (19, 1)

B) Center: (4, 1); Vertices: (−21, 1), (29, 1); Foci: (−16, 1), (24, 1)

C) Center: (4, 1); Vertices: (1, −21), (1, 29); Foci: (1, −11), (1, 19)

D) Center: (4, 1); Vertices: (1, −21), (1, 29); Foci: (1, −16), (1, 24)

Find an equation in standard form for the ellipse that satisfies the given conditions.

80) An ellipse with foci at (−3, 6) and (−3, 0); major axis length of 10 80) _____

A) $\frac{(y-3)^2}{25} + \frac{(x+3)^2}{16} = 1$ B) $\frac{(x-3)^2}{16} + \frac{(y-3)^2}{25} = 1$

C) $\frac{(y-3)^2}{25} + \frac{(x-3)^2}{16} = 1$ D) $\frac{(x-3)^2}{25} + \frac{(y-3)^2}{16} = 1$

Find the vertices and foci of the hyperbola.

81) $\frac{(y-5)^2}{64} - \frac{(x+4)^2}{36} = 1$ 81) _____

A) Vertices: (−4, 13), (−4, −3); Foci: (−4, 15), (−4, −5)

B) Vertices: (11, −4), (−1, −4); Foci: (−1, −4), (11, −4)

C) Vertices: (−4, 11), (−4, −1); Foci: (−4, −1), (−4, 11)

D) Vertices: (13, −4), (−3, −4); Foci: (15, −4), (−5, −4)

Find an equation in standard form for the hyperbola that satisfies the given conditions.

82) Center (3, −3), focus (8, −3), vertex (7, −3) 82) _____

A) $\frac{(x-3)^2}{9} - \frac{(y+3)^2}{16} = 1$ B) $\frac{(x-3)^2}{16} - \frac{(y+3)^2}{9} = 1$

C) $\frac{(x+3)^2}{16} - \frac{(y+3)^2}{9} = 1$ D) $\frac{(x-3)^2}{16} - \frac{(y+3)^2}{25} = 1$

Find the vertex, focus, directrix, and focal width of the parabola.

83) $x^2 = 28y$ 83) _____

A) Vertex: (0, 0); Focus: (0, 7); Directrix: y = –7; Focal width: 28
B) Vertex: (0, 0); Focus: (0, –7); Directrix: x = –7; Focal width: 112
C) Vertex: (0, 0); Focus: (7, 0); Directrix: x = 7; Focal width: 7
D) Vertex: (0, 0); Focus: (7, 0); Directrix: y = 7; Focal width: 112

84) $(y + 3)^2 = -8(x - 1)$ 84) _____

A) Vertex: (1, –3); Focus: (–7, –3); Directrix: x = 9; Focal width: 8
B) Vertex: (–3, 1); Focus: (–3, –1); Directrix: y = 3; Focal width: 2
C) Vertex: (–3, 1); Focus: (–3, –7; Directrix: y = 9; Focal width: 8
D) Vertex: (1, –3); Focus: (–1, –3); Directrix: x = 3; Focal width: 8

Find the vertex, the focus, and the directrix of the parabola.

85) $x^2 - 8x + 4y - 4 = 0$ 85) _____

A) Vertex: $\left(4, \frac{5}{2}\right)$; Focus: (4, 1); Directrix: y = –9
B) Vertex: $(4, 5)$; Focus: (4, 6); Directrix: y = 4
C) Vertex: $(4, 5)$; Focus: (4, 4); Directrix: y = 6
D) Vertex: $\left(4, \frac{19}{4}\right)$; Focus: (4, 1); Directrix: $y = \frac{21}{4}$

Answer Key
Testname: HA2PC_PCREVIEW

1) A
2) B
3) B
4) B
5) D
6) A
7) C
8) A
9) D
10) C
11) B
12) D
13) B
14) C
15) D
16) C
17) D
18) D
19) D
20) C
21) B
22) B
23) A
24) B
25) D
26) C
27) A
28) B
29) A
30) A
31) C
32) D
33) A
34) A
35) D
36) D
37) B
38) A
39) D
40) C
41) B
42) D
43) B
44) A
45) D
46) C
47) D
48) B
49) D

50) B
51) D
52) C
53) C
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55) D
56) A
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67) B
68) D
69) C
70) A
71) D
72) D
73) D
74) C
75) D
76) B
77) D
78) D
79) A
80) A
81) A
82) B
83) A
84) D
85) C