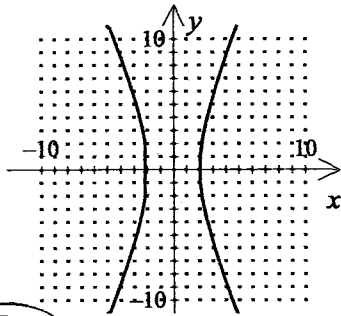
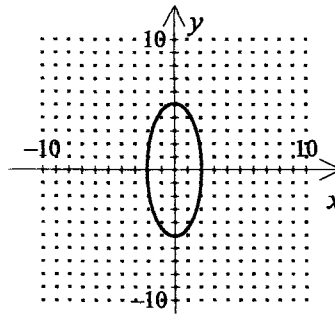


34. Which of the following is the graph of the equation $\frac{x^2}{25} - \frac{y^2}{4} = 1$?

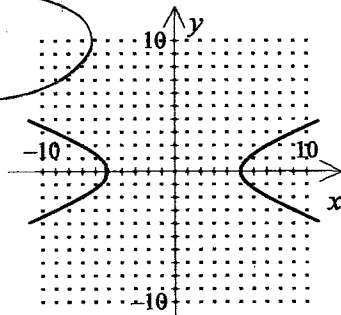
[A]



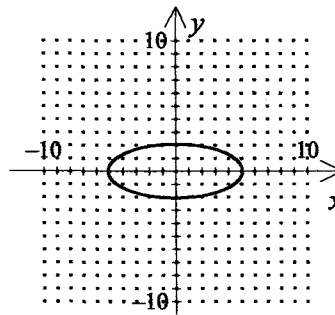
[B]



[C]



[D]



$$m = \frac{2}{5}$$

[34] _____

$$144(x^2 + 2x + 1) - 36(y^2 - 9y + 16) = 496 + 144 - 576$$

64

35. Identify and describe the conic section by the following equation:

$$144x^2 + 288x - 36y^2 + 288y = 496$$

$$\frac{(x+1)^2}{\frac{4}{9}} - \frac{(y-4)^2}{2} = 1$$

[A] hyperbola with vertices: $(-1 \pm \frac{2}{3}, 4)$

foci at: $(-1 \pm \frac{2}{3}\sqrt{5}, 4)$

[B] hyperbola with vertices: $(-1 \pm \frac{1}{3}, 4)$

foci at: $(-1 \pm \frac{2}{3}\sqrt{5}, -1 \pm \sqrt{5})$

[C] ellipse with vertices: $(4, -1 \pm \frac{1}{3})$

foci at: $(-1 \pm \sqrt{5}, -1 \pm \frac{2}{3}\sqrt{5})$

[D] ellipse with vertices: $(-1 \pm \frac{2}{3}, 4)$

foci at: $(4, -1 \pm \frac{2}{3}\sqrt{5})$

36. Solve the system graphically: $x^2 + y^2 = 4$

$$9x^2 + y^2 = 81$$

$$-9x^2 - 9y^2 = -36$$

$$-9y^2 = 45$$

$$\frac{x^2}{9} + \frac{y^2}{81} = 1$$

$$9x^2 + y^2 = 81 \quad [35] \text{ ---}$$

$$-x^2 - y^2 = -4$$

$$8x^2 = 77$$

$$x = \pm \sqrt{\frac{77}{8}}$$

$$y^2 = -\frac{45}{9}$$

[A] $\{(0, -9), (0, 9)\}$

[B] $\{(-3, 0), (3, 0)\}$

[C] $\{(0, -3), (0, 3)\}$

[D] \emptyset

$$x^2 + 16 = 144$$

$$x^2 = 128$$

37. Solve the system algebraically:

$$x^2 + y^2 = 144$$

$$x^2 - 4y^2 = 64$$

$$-x^2 - y^2 = -144$$

$$x^2 - 4y^2 = 64$$

$$-5y^2 = -80$$

$$y^2 = 16 \Rightarrow y = \pm 4$$

[A] $(1, \sqrt{143}), (1, -\sqrt{143})$

[B] $(8\sqrt{2}, 4), (8\sqrt{2}, -4)$

$(-1, \sqrt{143}), (-1, -\sqrt{143})$

[C] $(8\sqrt{2}, 4), (8\sqrt{2}, -4)$

[D] $(-8\sqrt{2}, 4), (-8\sqrt{2}, -4)$

$(-8\sqrt{2}, 4), (-8\sqrt{2}, -4)$

[37] _____

$$\frac{(x+3)+1}{2} = \frac{x+4}{2}$$

38. Find $g[f(x)]$ where $f(x) = x+3$ and $g(x) = \frac{x+1}{2}$.

[A] $\frac{x+7}{2}$

[B] $\frac{x+4}{2}$

[C] $\frac{x^2+4x+3}{2}$

[D] $\frac{3x+7}{2}$

$x = 2y^3 - 9$ [38] _____

39. Given $f(x) = 2x^3 - 9$, find $f^{-1}(x)$.

[A] $\frac{1}{2x^3 - 9}$

[B] $\sqrt[3]{\frac{x+9}{2}}$

[C] $2x^{-1} - 9$

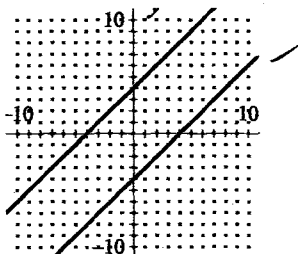
[D] $\frac{(x+9)^3}{8}$

$\frac{x+9}{2} = y^3$

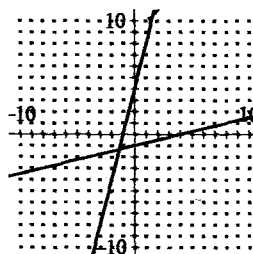
[39] _____

40. Let $f(x) = 4x - 4$. Graph f and its inverse.

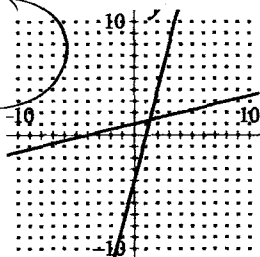
[A]



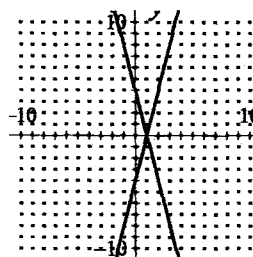
[B]



[C]



[D]



$x = 4y - 4$

$x + 4 = 4y$

$\frac{1}{4}x + 1 = y$

[40] _____

41. A variable y varies directly with the square of x . If $x = 3$ when $y = 6$, find the constant of proportionality, k .

[A] $\frac{2}{3}$

[B] $6\sqrt{3}$

[C] 2

[D] 54

$k = \frac{y}{x^2}$

$\frac{6}{(3)^2} = \frac{6}{9} = \frac{2}{3}$

[41] _____

$$P(V)$$

$$(1740)(6) = k$$

$$k =$$

42. If the temperature of a gas is held constant, the pressure P varies inversely as the volume V . A pressure of 1740 lb per in² is exerted by 6 ft³ of air in a cylinder fitted with a piston. Find k .

[A] $\frac{1}{10,440}$

[B] 10,440

[C] 290

[D] $\frac{1}{290}$

[42] _____

43. The amount of oil used by a ship traveling at a uniform speed varies jointly with the distance and the square of the speed. If the ship uses 550 barrels of oil in traveling 500 miles at 36 mph, determine how many barrels of oil are used when the ship travels 360 miles at 18 mph.

[A] 297 barrels

[B] 99 barrels

[C] 396 barrels

[D] 198 barrels

[43] _____

44. Multiply: $\frac{x+1}{2x+y} \cdot \frac{4x^2-y^2}{3x^2+5x+2}$

[A] $\frac{2x^2-y^2}{3x+2}$

[B] $\frac{2x+y}{5x+5}$

[C] $\frac{2x-y}{5}$

[D] $\frac{2x-y}{3x+2}$

[44] _____

45. Divide: $\frac{2x^2-9x+4}{2x^2-3x+1} \div \frac{x^2-9x+20}{4x^2-24x+20}$

[A] $x-5$

[B] 4

[C] $x-4$

[D] 5

[45] _____

46. Simplify: $\frac{x^2+10x+25}{\frac{-12x}{x+5} - 6x}$

[A] $11x+5$

[B] $\frac{x-5}{2}$

[C] $\frac{x+25}{2x}$

[D] $\frac{x+5}{2}$

[46] _____

$$7(3)x + 5y^2$$

$$\frac{21x + 5y^2}{15x^4y^5}$$

$$LCD: 15x^4y^5$$

47. Find the least common denominator: $\frac{7}{5x^3y^5} + \frac{1}{3x^4y^3}$

[A] x^4y^5

[B] $15x^3y^3$

[C] $15x^4y^5$

[D] x^3y^3

48. Add: $\frac{x+1}{x^2+x-6} + \frac{x-3}{x^2-4}$

$$\frac{(x+1)(x+2)}{(x+3)(x-2)} + \frac{(x-3)(x+3)}{(x-2)(x+2)}$$

[47] _____

[A] $\frac{2x^2+3x-7}{(x-2)(x+2)(x+3)}$

[B] $\frac{2x^2-x-7}{(x-2)(x+2)(x+3)}$

$$x^2+3x+2+x^2-9$$

[C] $\frac{2x^2+3x-11}{(x-2)(x+2)(x+3)}$

[D] $\frac{2x^2-x-11}{(x-2)(x+2)(x+3)}$

49. Subtract: $\frac{x-3}{x^2+3x-4} - \frac{x+2}{x^2-1}$

$$\frac{(x-3)(x+1)}{(x+4)(x-1)} - \frac{(x+2)(x+1)}{(x-1)(x+1)}$$

[48] _____

[A] $\frac{2x^2-8x-11}{(x+4)(x+1)(x-1)}$

[B] $\frac{-8x-11}{(x+4)(x+1)(x-1)}$

[C] $\frac{4x+5}{(x+4)(x+1)(x-1)}$

[D] $\frac{2x^2+4x+5}{(x+4)(x+1)(x-1)}$

[49] _____

50. Solve: $\frac{x}{x+6} - \frac{x}{x-6} = \frac{x^2+36}{x^2-36}$

[A] no solution

[B] {6}

[C] {6, -6}

[D] {-6}

$$x(x-6) - x(x+6) = x^2+36$$

[50] _____

$$x^2 - 6x - x^2 - 6x = x^2 + 36$$

$$x^2 - 12x + 36 = 0$$

$$(x-6)^2 = 0$$

$$x = 6$$