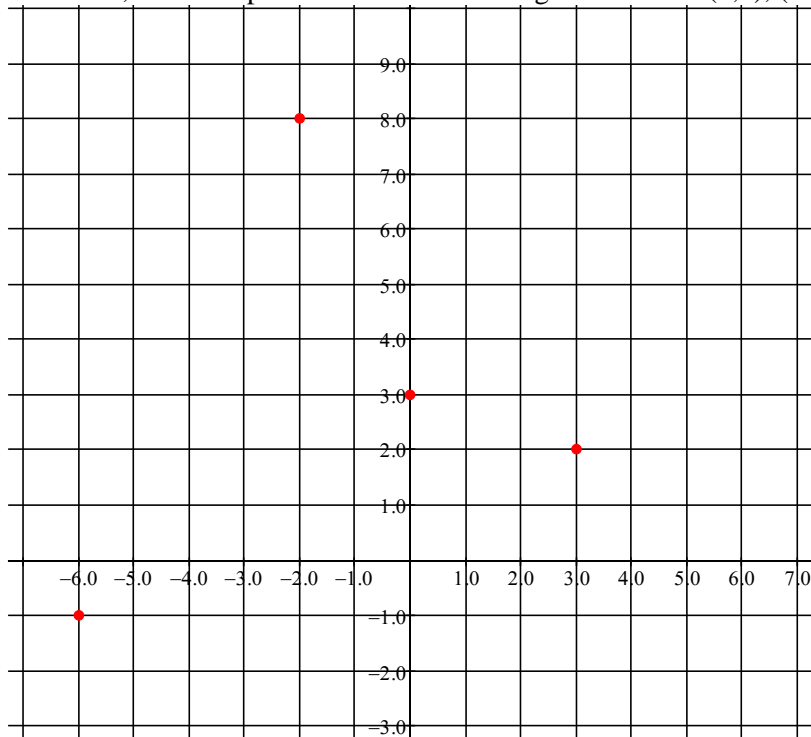


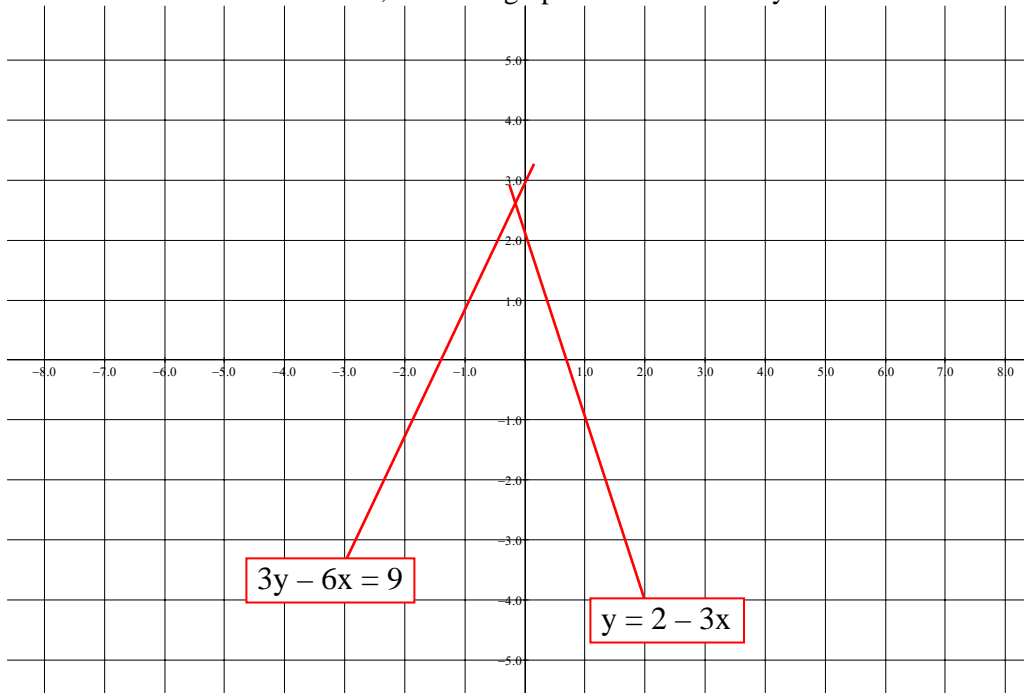
math 009 online practice exam 3

1. On a set of axes, mark the positions of the following coordinates: (3,2), (-2,8), (-6,-1), (0,3)



2. Draw the graph of the relation $y = 2 - 3x$

3. On the same set of axes, draw the graph of the relation $3y - 6x = 9$.



10. An automatic vending machine in the post office provides a packet of 27 10-cent and 20-cent stamps worth \$3.00. If the stamps are priced at their face value, how many of each type of stamp are there?

$$\begin{aligned} x + b &= 27 & b &= 27 - x & .10x + .20(27 - x) &= 3.00 \\ .10x + .20b &= 3.00 & & & .10x + 5.4 - .20x &= 3.00 \end{aligned}$$

24 - .10 cent stamps
3 - .20 cent stamps

$$\begin{array}{r} .10x + 5.4 - .20x = 3.00 \\ - .10x \quad - .10x \\ \hline 5.4 - .10x = 3.00 \\ - 5.4 \quad - 5.4 \\ \hline -.10x = -2.4 \\ \frac{-.10x}{-.10} = \frac{-2.4}{-.10} \end{array}$$

$$\begin{aligned} x &= 24 \\ b &= 27 - 24 \\ b &= 3 \end{aligned}$$

11. Reduce: $\frac{4x^3 - 36x}{x^2 + 6x + 9} = \frac{4x(x-3)\cancel{(x+3)}}{\cancel{(x+3)}(x+3)} = \frac{4x(x-3)}{(x+3)}$

12. Multiply: $\frac{x^2 - 1}{x^2 - 8x - 20} \cdot \frac{x^2 + 4x + 4}{x^2 + 3x + 2} = \frac{\cancel{(x+1)}(x-1)}{\cancel{(x+2)}(x-10)} \cdot \frac{\cancel{(x+2)}(x+2)}{\cancel{(x+2)}(x+1)} = \frac{(x-1)}{(x-10)}$

13. Add: $\frac{x+5}{7x+10} + \frac{3x+5}{7x+10} = \frac{4x+10}{7x+10}$

14. Subtract: $\frac{3}{x-4} - \frac{5}{x+2} = \frac{3x+6}{(x+2)(x-4)} - \frac{5x-20}{(x+2)(x-4)} = \frac{-2x+26}{(x+2)(x-4)}$

15. Subtract: $(3x^5 - 3x^4 + 7x^2 - 4) - (-9x^4 - 5x^3 + 8x^2) = 3x^5 + 6x^4 + 5x^3 - x^2 - 4$

16. Multiply: $(7x^3 + 2x - 5)(5x^2 - 7) = 35x^5 - 49x^3 + 10x^3 - 14x - 25x^2 + 35 = 35x^5 - 39x^3 - 25x^2 - 14x + 35$

17. Factor: $x^2 - 3x - 28 = (x+4)(x-7)$

18. Factor: $18x^2 + 33x + 9 = 3(6x^2 + 11x + 3) = 3(6x^2 + 2x + 9x + 3) = 3(2x+3)(3x+1)$

19. Solve: $(4x-7)(2x+3) = 0$

$$\begin{aligned} 4x - 7 &= 0 & 2x + 3 &= 0 \\ \frac{+7+7}{4} & & \frac{-3-3}{2} & \\ \frac{4x}{4} &= \frac{7}{4} & \frac{2x}{2} &= \frac{-3}{2} \\ x &= 1\frac{3}{4} & x &= -1\frac{1}{2} \end{aligned}$$

$$\begin{aligned} 4\left(1\frac{3}{4}\right) - 7 &= 7 - 7 = 0 \\ 2\left(-1\frac{1}{2}\right) + 3 &= 3 + 3 = 0 \end{aligned}$$

20. Solve: $6x^2 + 11x + 3 = 0$

$$\begin{aligned} 6x^2 + 2x + 9x + 3 &= 0 & 3x + 1 &= 0 \\ 2x(3x+1) + 3(3x+1) & & \frac{-1-1}{3} & \\ \frac{2x}{3} = \frac{-3}{3} & & \frac{2x}{2} &= \frac{-3}{2} \\ (3x+1)(2x+3) &= 0 & x &= -\frac{1}{3} & x &= -1\frac{1}{2} \end{aligned}$$

$$\begin{aligned} 3\left(-\frac{1}{3}\right) + 1 &= -1 + 1 = 0 \\ 2\left(-1\frac{1}{2}\right) + 3 &= -3 + 3 = 0 \end{aligned}$$