

1. Solve the following. Check your solutions.

a. $2 + \sqrt[3]{4x-3} = 7$

$$x = 32$$

b. $\sqrt{x+40} = \sqrt{x} + 4$

$$x = 9$$

2.
$$\frac{3x^3 + 4x^2 + 7x + 22}{x+2}$$

a. Divide using Long or Tabular Division

b. Divide using Synthetic Division

$$3x^2 - 2x + 11$$

c. Find the remaining roots.

$$\frac{2 \pm 8i\sqrt{2}}{6} \text{ or } \frac{1 \pm 4i\sqrt{2}}{3}$$

3. Solve by factoring.

a. $x^2 - 9x - 70 = 0$

$$x = 14$$
$$x = -5$$

b. $121x^2 - 9 = 0$

$$x = -\frac{3}{11}$$
$$x = \frac{3}{11}$$

c. $6x^2 - 23x + 7 = 0$

$$x = \frac{1}{3}$$
$$x = \frac{7}{2}$$

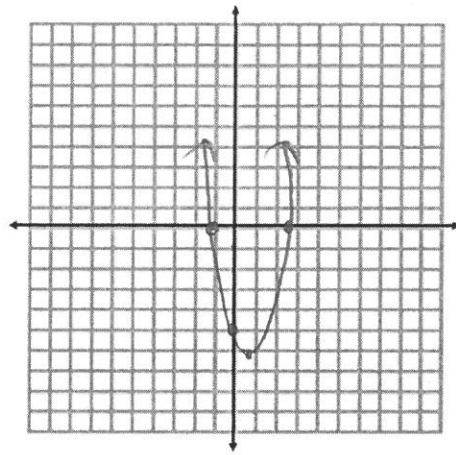
4. Given $f(x) = 2x^2 - 3x - 5$, find the following:

a. x - intercept(s): $(-1, 0)$ $(2.5, 0)$

b. y - intercept: $(0, -5)$

c. Vertex: $(.75, -6.125)$

d. Sketch a graph using key features.



5. Simplify.

a. i^{207}

$-i$

b. $(12 - 9i) + (8i - 3)$

$9 - i$

c. $(12 - 9i)(8i - 3)$

$36 + 123i$

d. $(12 - 9i) - (8i - 3)$

$15 - 17i$

e. $\frac{x^2 - 5x - 66}{4x - 28} \div \frac{x^2 - 12x + 11}{x^2 - 8x + 7}$

$x \neq 7, 1, 11$
 $\frac{(x+6)}{4}$

f. $\frac{9}{3x-6} - \frac{18}{x^2+2x-8}$

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