Simplify each radical

$\sqrt{24}$ $= \sqrt{4} \cdot \sqrt{6}$

$2\sqrt{6}$

$\sqrt{72}$

$\sqrt{36} \cdot \sqrt{2}$

$6\sqrt{2}$

$\sqrt{9} \cdot \sqrt{8}$

$3\sqrt{8} = 3\sqrt{4} \cdot \sqrt{2}$

$3 \cdot 2 \cdot \sqrt{2}$

$6\sqrt{2}$

$\sqrt{128}$

$\sqrt{64} \cdot \sqrt{2}$

$8\sqrt{2}$

$4, 2 \quad \frac{11}{\sqrt{7}}$

$\sqrt{8^2 + 15^2}$

$\sqrt{64 + 225}$

$\sqrt{289} = 17$

$\frac{\sqrt{112}}{\sqrt{7}}$

$\sqrt{\frac{112}{7}} = \sqrt{16}$

$= 4$

$4\sqrt{8}$

$4 \cdot \sqrt{4} \cdot \sqrt{2}$

$4 \cdot 2 \cdot \sqrt{2}$

$8\sqrt{2}$

Solve using the quadratic formula. Simplify all radicals and if the solution is complex leave in the form of *a+bi*.

$ax^2+bx+c=0$

$$\frac{-b\pm\sqrt{b^2-4ac}}{2a}$$

$3x^2-5x+1=0$

$$\frac{5\pm\sqrt{(-5)^2-4(3)(1)}}{2(3)}$$

$$\frac{5\pm\sqrt{25-12}}{6}$$

$$\frac{5\pm\sqrt{13}}{6}$$

$-3x^2-5x+10=0$

$$\frac{5\pm\sqrt{(-5)^2-4(-3)(10)}}{(2)(-3)}$$

$$\frac{5\pm\sqrt{25-(-120)}}{-6}$$

$$\frac{5\pm\sqrt{145}}{-6}$$

$x^2+2x+5=0$

$$\frac{-2\pm\sqrt{2^2-4(1)(5)}}{2(1)}$$

$$\frac{-2\pm\sqrt{4-20}}{2}$$

$$\frac{-2\pm\sqrt{-16}}{2}$$

$$\frac{-2\pm\sqrt{16}\,i}{2}$$

$$\frac{-2\pm 4i}{2}$$

$$-1\pm 2i$$

$4x^2+8x-1=0$

$$\frac{-8\pm\sqrt{(8)^2-4(4)(-1)}}{2(4)}$$

$$\frac{-8\pm\sqrt{64+16}}{8}$$

$$\frac{-8\pm\sqrt{80}}{8}=\frac{-8\pm\sqrt{16}\cdot\sqrt{5}}{8}$$

$$\frac{-8\pm 4\sqrt{5}}{8}$$

$$\frac{-2\pm\sqrt{5}}{2}$$

Solve by factoring

$2x^2 + 19x + 24 = 0$ $\frac{48}{16 \cdot 3}$

$(2x^2+16x)+(3x+24)=0$

$2x(x+8)+3(x+8)=0$

$(2x+3)(x+8)=0$

$2x+3=0 \quad x+8=0$

$x=-\frac{3}{2} \quad x=-8$

$\frac{2x^2 + 16x - 130}{2} = \frac{0}{2}$ $\frac{-65}{13 \cdot -5}$

$x^2+8x-65=0$

$(x+13)(x-5)=0$

$x=-13 \quad x=5$

$x^2 - 20x = -51$ $\frac{51}{-17 \cdot -3}$

$x^2-20x+51=0$

$(x-17)(x-3)=0$

$x-17=0 \quad x-3=0$

$x=17 \quad x=3$

$6x^2 - 23x - 18 = 0$ $\frac{-108}{-27 \cdot 4}$

$(6x^2-27x)+(4x-18)$

$3x(2x-9)+2(2x-9)$

$(3x+2)(2x-9)=0$

$3x+2=0 \quad 2x-9=0$

$3x=-2 \quad 2x=9$

$x=-\frac{2}{3} \quad x=\frac{9}{2}$

Solve by any method

$-3 \pm 2\sqrt{3}$

$x^2 + 6x - 3 = 0$

$(x+3)^2 = 12$

$x + 3 = \pm\sqrt{12}$

$-3 \pm 2\sqrt{3}$

-40: $-8 \cdot 5$, $-20 \cdot 2$, $-10 \cdot 4$; $-5 \cdot 8$, $-2 \cdot 20$, $-4 \cdot 10$

$5x^2 + 8x - 8 = 0$

$$\frac{-8 \pm \sqrt{(8)^2 - 4(5)(-8)}}{2(5)}$$

$$\frac{-8 \pm \sqrt{64 - (-160)}}{10}$$

$$\frac{-8 \pm \sqrt{224}}{10}$$

$$\frac{-8 \pm \sqrt{16} \cdot \sqrt{14}}{10} = \frac{-8 \pm 4\sqrt{14}}{10}$$

$$= \frac{-4 \pm 2\sqrt{14}}{5}$$

-9: $-1 \cdot 9$

$3x^2 + 8x = 3$

$3x^2 + 8x - 3 = 0$

$(3x^2 - x) + (9x - 3) = 0$ $\quad x = \frac{1}{3}$ $x = -3$

$x(3x-1) + 3(3x-1) = 0$

$(3x-1)(x+3) = 0$

-12: $-3 \cdot 4$

$2x^2 + x - 6 = 0$

$(2x^2 - 3x) + (4x - 6) = 0$

$x(2x-3) + 2(2x-3) = 0$

$(2x-3)(x+2) = 0$

$x = \frac{3}{2}$ $\quad x = -2$

Preform the indicated operation. Write your answer in standard form

$2 + 3i + 7 - i$ $9+2i$

$-i + (8 - 2i) - (5 - 9i)$

$-i + 8 - 2i - 5 + 9i$

$3 + 6i$

$i(3 + i) - 2i$

$3i + i^2 - 2i$

$3i - 1 - 2i$

$-1 + i$

$i = \sqrt{-1}$

$i^2 = (\sqrt{-1})^2$

$= -1$

$a+bi$

$2 - 6i - (-10 + 4i)$

$2 - 6i + 10 - 4i$

$12 - 10i$

$(30 - i) - (18 + 6i) + 30i$

$30 - i - 18 - 6i + 30i$

$12 + 23i$

$(5 + i)(8 - 3i)$

$40 - 15i + 8i - 3i^2$

$40 - 7i - 3(-1)$

$40 - 7i + 3$

$43 - 7i$

Katie, a goalie for Riverside High School's soccer team, needs to get the ball downfield to her teammates on the offensive end of the field. She punts the ball from a point 2 feet above the ground with an initial upward velocity of 40 feet per second. $h(t) = h_0 + V_0 t - 16t^2$ $h(t) = 2 + 40t - 16t^2$

Write an function rule that relates the ball's height above the ground to its time in the air.

Use the function rule to find the time when the ball hits the ground. $\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

$-16t^2 + 40t + 2 = 0$

What time does the ball reach its maximum height? What is the maximum height?

$x = \frac{-b}{2a}$