

1 Solve $x^2 + 15x + 56 = 0$

$$(x^2 + 7x) + (8x + 56)$$

$$x(x+7) + 8(x+7)$$

$$(x+8)(x+7)$$

Answer = $(x+8)(x+7)$

2 Solve

$$2x^2 - 11x = 21$$

$$2x^2 - 11x - 21 = 0$$

$$(2x^2 + 3x) + (-14x - 21)$$

$$x(2x+3) - 7(2x+3)$$

$$x(2x+3) - 7(2x+3)$$

$$(2x+3)(x-7)$$

Answer = $(2x+3)(x-7)$

3 Solve

$$(x-2)(2x+5) = -7$$

$$(x-2)(2x+5)$$

$$2x^2 + x - 10 = -7$$

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

Answer =

$$x_{1,2} = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

For $a=2$ $b=1$ $c=-3$

$$x_{1,2} = \frac{-1 \pm \sqrt{1^2 - 4 \cdot 2 \cdot (-3)}}{2 \cdot 2}$$

$$x = 1, x = -\frac{3}{2}$$

4. $h = -16t^2 + 30t + 4$

$$h =$$

$$-16t^2 + 30t = -4$$

Using quadratic equation

$$x_{1,2} = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$t_{1,2} = \frac{-30 \pm \sqrt{30^2 - 4(-16)(4)}}{2(-16)}$$

$$t = -\frac{1}{8}, t = 2$$

a) Initial height at $t=0$

~~2 feet~~

$$h = 4 \text{ feet}$$

b) How long does it take to reach 18ft

$$18 = -16t^2 + 30t + 4$$

$$14 = -16t^2 + 30t$$

$$-16t^2 + 30t - 14 = 0$$

$$t = \frac{-30 \pm \sqrt{30^2 - 4(-16)(-14)}}{2(-16)}$$

$$t = 1, t = \frac{7}{8}$$

c) How long does it take to hit the ground

$$t = -\frac{1}{8}, t = 2$$

$$5 \quad a) \quad a^2 + b^2 = c^2$$

$$x^2 + (x+7)^2 = 13^2$$

$$2x^2 + 14x + 49 = 169$$

$$2x^2 + 14x - 120 = 0$$

$$x_{1,2} = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$= \frac{-14 \pm \sqrt{14^2 - 4 \cdot 2(-120)}}{2 \cdot 2}$$

$$x = 5, -12$$

$$\text{height} = 5$$

$$b) \quad 12(x+7)$$

$$x = 5$$

$$\text{Answer} = (5+7)$$

$$\text{Answer} = 12$$

$$6 \quad h = -16t^2 + 144$$

$$a) \quad \text{Initial height} = 144$$

$$b) \quad \text{Seconds taken to reach 80ft}$$

$$80 = -16t^2 + 144$$

$$-16t^2 - 64$$

$$16t^2 = -64$$

$$t^2 = -4$$

$$t = 2, -2$$

c) How many Seconds must pass for the rock to hit the water

$$h = 0 = -16t^2 + 144$$

$$16t^2 = 144$$

$$t^2 = 9$$

$$t = 3$$

7) If the Circumference of a Circle is 20cm find the Area.

$$\text{Circumference} = 2\pi r$$

$$20 = 2\pi r$$

$$6.36619 = D \quad (\text{Radius} = 3.183095)$$

$$\text{Area} = \pi r^2$$

$$\text{Area} = 31.83091$$

8) In a Computer Catalog, a Computer is Listed as being 19 inches. This distance is the diagonal distance across the Screen. If the Screen measures 10 inches in height What is the actual width of the Screen.

$$a^2 + b^2 = c^2$$

$$19^2 = 10^2 + b^2$$

$$b^2 = 19^2 - 10^2$$

$$b^2 = 261$$

$$b = 16.15549$$

$$9 \quad a^2 + b^2 = c^2$$

$$34^2 + b^2 = c^2$$

$$34^2 + 41^2 = c^2$$

$$2837 = c^2$$

$$c = \sqrt{2837}$$

$$c = \underline{53.26349}$$

$$c = 53.26349$$

10 Volume of a Cone

$$\frac{1}{3} \pi r^2 h$$

$$h = \sqrt{13^2 - 10^2}$$

$$h = 8.30662$$

$$\text{Volume} = \frac{1}{3} \pi 10^2 \times 8.30662$$

$$\text{Volume} = 869.86721$$

$$11 \quad 2x + 5y = -1$$

$$3x + 4y = 8$$

$$2x + 5y = -1$$

$$x = \frac{-1 - 5y}{2}$$

$$3 \cdot \frac{-1 - 5y}{2} + 4y = 8$$

$$y = \frac{-19}{7}$$

$$x = \frac{-1 - 5\left(\frac{-19}{7}\right)}{2}$$

$$x = \frac{44}{7}$$

11) Answer =

$$x = \frac{-19}{7} \quad y = \frac{44}{7}$$

$$12) 3x + 15y = 30$$

$$2x + 4y = 11$$

$$x = 5(-y + 2)$$

$$5(-y + 2) + 4y = 11$$

$$y = \frac{3}{2}$$

$$x = 5\left(-\frac{3}{2} + 2\right) = \frac{5}{2}$$

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

Solution

$$y = 1.5 \quad x = 2.5$$