

1.5 Solving Quadratic Equations - Part 2: Solve Using the Q.F. - Worksheet

MCR3U

Jensen



1) Use the discriminant to determine the number of roots for each quadratic equation.

a) $x^2 - 10x + 25 = 0$

b) $3x^2 + 4x + \frac{4}{3} = 0$

c) $2x^2 - 8x + 9 = 0$

d) $-2x^2 + 0.75x + 5 = 0$

2) Solve each quadratic using the quadratic formula. Give exact answers.

a) $x^2 + 4x - 3$

b) $-x^2 + 12 = 9x$

c) $x^2 = -5x + 2$

d) $x^2 - 3x + 1 = 6$

e) $x^2 + 6x + 9 = 0$

f) $4x^2 - 6x - 1 = 0$

g) $5x^2 - 3x - 1 = 0$

h) $-x^2 + 7x - 18 = 0$

i) $4x^2 - 25 = 0$

j) $3x^2 - 7x - 4 = x^2 - 4x$

k) $8x^2 + 4x - 5 = 0$

l) $4x^2 - 18x = 0$

3) Solve each quadratic equation using any method

a) $3x^2 - 12x = 0$

b) $2x^2 + 4x - 6 = 0$

c) $3x^2 + 5x - 2 = 0$

d) $4x^2 - 11x - 8 = 0$

4) Three lengths of pipe measuring 24 cm, 31 cm, and 38 cm will be used to create a right triangle. The same length of pipe will be cut off each of the three pipes to allow a right triangle to be created. What is that length?

Answers

1) a) one b) one c) none d) two

2) a) $-2 + \sqrt{7}, -2 - \sqrt{7}$ b) $\frac{-9-\sqrt{129}}{2}, \frac{-9+\sqrt{129}}{2}$ c) $\frac{-5+\sqrt{33}}{2}, \frac{-5-\sqrt{33}}{2}$ d) $\frac{3+\sqrt{29}}{2}, \frac{3-\sqrt{29}}{2}$ e) -3 f) $\frac{3+\sqrt{13}}{4}, \frac{3-\sqrt{13}}{4}$

g) $\frac{3+\sqrt{29}}{10}, \frac{3-\sqrt{29}}{10}$ h) no roots i) $\frac{5}{2}, -\frac{5}{2}$ j) $\frac{3+\sqrt{41}}{4}, \frac{3-\sqrt{41}}{4}$ k) $\frac{-1+\sqrt{11}}{4}, \frac{-1-\sqrt{11}}{4}$ l) $\frac{9}{2}, 0$

3) a) $x = 0$ and $x = 4$ b) $x = 1$ and $x = -3$ c) $x = \frac{1}{3}$ and $x = -2$ d) $x = \frac{11 \pm \sqrt{249}}{8}$

4) 3 cm