

Bell Ringer - Solve the quadratic. Leave in simplified radical form.

1. $-4x^2 + 20 = -52$

Bell Ringer - Solve the quadratic. Leave in simplified radical form.

$$1. -4x^2 + 20 = -52$$

$$-4x^2 = -72$$

$$x^2 = 18$$

$$x = \sqrt{18}$$

$$x = \pm 3\sqrt{2}$$

Factorable vs Non-Factorable Quadratics



Discriminant: $b^2 - 4ac$ must be a perfect square.
Factoring method is used to solve for 'x'.

Discriminant is NOT a perfect square.
Requires the quadratic formula
to solve for 'x'.

Factor and solve if possible. If not, write non-factorable and solve using the quadratic formula. Use the discriminant to justify the decision.

$$1) 12x^2 - 5x - 3 = 0$$

discriminant

$$-5^2 - 4(12)(-3)$$

$$25 + 144$$

169 perfect square
so it can be
factored

$$1) 12x^2 - 5x - 3 = 0$$

$$ac = 12(-3) = -36$$

b factors

-9 and 4

3x

$$(4x-3)(3x+1) = 0$$

1

$$x = \frac{3}{4} \text{ and } -\frac{1}{3}$$

4x

-3

$12x^2$	$-9x$
$4x$	-3

Factor and solve if possible. If not, write non-factorable and solve using the quadratic formula. Use the discriminant to justify the decision.

$$2) 4x^2 - 3x - 8 = 0$$

discriminant

$$-3^2 - 4(4)(-8)$$

$$9 + 128$$

137 not a perfect square, must use quadratic formula

$$\frac{-3 \pm \sqrt{-3^2 - 4(4)(-8)}}{2(4)}$$

$$\frac{3 \pm \sqrt{137}}{8}$$

$$\frac{3 + 11.7}{8}, \frac{3 - 11.7}{8}$$

$$1.84, -1.09$$

Factor and solve if possible. If not, write non-factorable and solve using the quadratic formula. Use the discriminant to justify the decision.

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

Factor and solve if possible. If not, write non-factorable and solve using the quadratic formula. Use the discriminant to justify the decision.

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

discriminant

$$-2^2 - 4(3)(-2)$$

$$4 + 24$$

28 not a perfect square

$$\frac{-2 \pm \sqrt{28}}{2(3)}$$

$$\frac{2 + 5.3}{6}, \frac{2 - 5.3}{6}$$

$$1.22, -0.55$$

Factor and solve if possible. If not, write non-factorable and solve using the quadratic formula. Use the discriminant to justify the decision.

$$4) 8x^2 + 38x = -9$$

Factor and solve if possible. If not, write non-factorable and solve using the quadratic formula. Use the discriminant to justify the decision.

$$4) 8x^2 + 38x = -9$$

$$8x^2 + 38x + 9 = 0$$

discriminant

$$38^2 - 4(8)(9)$$

$$1444 - 288$$

1156 perfect
square so factor

$$4) 8x^2 + 38x = -9$$

$$8x^2 + 38x + 9 = 0$$

$$ac = 8(9) = 72$$

b factors

36 and 2

$$(2x+9)(4x+1) = 0$$

$$x = -\frac{9}{2} \text{ and } -\frac{1}{4}$$

	$4x$	1
$2x$	$8x^2$	$2x$
9	$36x$	9