Algebra 1 Bellwork Monday, June 8, 2015

Solve each equation with the Quadratic Formula: $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

Round to the nearest hundredth.

1. $-3x^2 - 8x + 2 = 0$

2. $7x^2 + 5x + 10 = 0$

Write the growth/decay factor (b) that each % change represents.

3. 1.37% decrease

4. 10.6% increase

For each equation tell what % change it represents and whether it's an increase or decrease.

5. $y = 305(1.041)^x$

6. $y = 14.06(0.803)^x$

7. Factor: $24w^4xy^9 + 32w^3x^4y^4 - 48w^2x^5y^6$

8. An object is shot upward from an initial height of 80 feet with an initial velocity of 216 ft/sec. The following equation models the height of the object as a function of time: $h = -16t^2 + 216t + 80$

a. Find the time it takes the object to hit the ground.

b. Find the maximum height of the ball and the time it takes to reach that height.

c. Find the time it takes the object to reach a height 850 feet.

9. Simplify: $\frac{\sqrt{14m^{-5}p^8}}{\sqrt{72}\,m^3p}$

10. Rationalize the denominator $\frac{32c^5}{\sqrt{6c}}$

ALG 1 Bellwork Answers Monday 6-8-15

(1) $-3x^2 - 8x + 2 = 0$ $\quad b^2 - 4ac = 88$

$$x = \frac{8 \pm \sqrt{88}}{-6} = \boxed{-2.90,\ 0.23}$$

(2) $7x^2 + 5x + 10 = 0$ $\quad b^2 - 4ac = -255$

No real Solution

(3) 1.37% dec → $100 - 1.37 = 98.63\%$ $\quad \boxed{b = .9863}$

(4) 10.6% inc → $100 + 10.6 = 110.6\%$ $\quad \boxed{b = 1.106}$

(5) $y = 305(1.041)^x$ →

$1.041 \times 100 = 104.1\%$

$104.1 - 100 = \boxed{4.1\% \text{ inc}}$

(6) $y = 14.06(0.803)^x$ →

$0.803 \times 100 = 80.3\%$

$100 - 80.3 = \boxed{19.7\% \text{ dec}}$

(7) $24w^4xy^9 + 32w^3x^4y^4 - 48w^2x^5y^6$

GCF → $8w^2xy^4$

$$\boxed{8w^2xy^4(3w^2y^5 + 4wx^3 - 6x^4y^2}$$

(8) $h = -16t^2 + 216t + 80$

a) $h = 0$ $\quad 0 = -16t^2 + 216t + 80$

$b^2 - 4ac = 51{,}776$

$t = \dfrac{-216 \pm \sqrt{51{,}776}}{-32} = -.36,\ 13.86$

13.86 sec

b) time to max ht: $t = \dfrac{-b}{2a} = \dfrac{-216}{-32} =$ **6.75 sec**

max ht $= -16(6.75)^2 + 216(6.75) + 80$

$=$ **809 ft**

c) $h = 850$ $\quad 850 = -16t^2 + 216t + 80$

$-850 \qquad\qquad -850$

$0 = -16t^2 + 216t - 770$

$b^2 - 4a = -2624$

OBJECT won't reach this ht

(9) $\dfrac{\sqrt{14m^{-5}p^8}}{\sqrt{72m^3p}}$

simplify fraction 1ST

$= \dfrac{\sqrt{7p^7}}{\sqrt{36m^8}}$

now do sq. roots

$\dfrac{p^3\sqrt{7p}}{6m^4}$

(10) $\dfrac{32c^5}{\sqrt{6c}} \cdot \dfrac{\sqrt{6c}}{\sqrt{6c}}$

$= \dfrac{32c^5\sqrt{6c}}{6c}$

$= \dfrac{16c^4\sqrt{6c}}{3}$