12.4 Solve Quadratics using Quadratic Formula

PRACTICE

Express in decimal form. (Round to the nearest hundredth)

1. $\frac{6\pm\sqrt{108}}{4}$

4.1 and -1.1

2. $\frac{-3\pm\sqrt{289}}{8}$

1.75 and -2.5

3. $\frac{9\pm\sqrt{678}}{-6}$

-5.84 and 2.84

Express in simplest radical form.

4. $\frac{12\pm\sqrt{180}}{6}$

$\frac{12\pm\sqrt{36}\cdot\sqrt{5}}{6} = \frac{12\pm 6\sqrt{5}}{6}$

$= \frac{12}{6} \pm \frac{6\sqrt{5}}{6}$

$2\pm\sqrt{5}$

5. $\frac{6\pm\sqrt{567}}{4}$

$\frac{6\pm\sqrt{81}\cdot\sqrt{7}}{4} = \frac{6\pm 9\sqrt{7}}{4}$

$= \frac{6}{4} \pm \frac{9\sqrt{7}}{4}$

$\frac{3}{2} \pm \frac{9\sqrt{7}}{4}$

6. $\frac{-6\pm\sqrt{75}}{2}$

$\frac{-6\pm\sqrt{25}\cdot\sqrt{3}}{2} = \frac{-6\pm 5\sqrt{3}}{2}$

$= \frac{-6}{2} \pm \frac{5\sqrt{3}}{2}$

$-3 \pm \frac{5\sqrt{3}}{2}$

Solve. Express your answer in decimal form. (Round to the nearest hundredth)

7. $2n^2 + 3n - 54 = 0$

$a=2$, $b=3$, $c=-54$

$n = \frac{-3\pm\sqrt{3^2-4(2)(-54)}}{2(2)} = \frac{-3\pm\sqrt{441}}{4}$

$n = \frac{-3+\sqrt{441}}{4}$ and $\frac{-3-\sqrt{441}}{4}$

$n = 4.5$ and -6

8. $-8m^2 + 7m = -4$

$+4 \quad +4$

$-8m^2 + 7m + 4 = 0$

$a=-8$, $b=7$, $c=4$

$m = \frac{-7\pm\sqrt{7^2-4(-8)(4)}}{2(-8)} = \frac{-7\pm\sqrt{177}}{-16}$

$m = \frac{-7+\sqrt{177}}{-16}$ and $\frac{-7-\sqrt{177}}{-16}$

$m = -0.39$ and 1.27

9. $4h^2 + 7h = -15$

$+15 \quad +15$

$4h^2 + 7h + 15 = 0$

$a=4$, $b=7$, $c=15$

$h = \frac{-7\pm\sqrt{7^2-4(4)(15)}}{2(4)} = \frac{-7\pm\sqrt{-191}}{8}$

NO SOLUTION

10. $8x^2 - 2x - 4 = 4x$

$-4x \quad -4x$

$8x^2 - 6x - 4 = 0$

$a=8$, $b=-6$, $c=-4$

$x = \frac{6\pm\sqrt{(-6)^2-4(8)(-4)}}{2(8)} = \frac{6\pm\sqrt{164}}{16}$

$x = \frac{6+\sqrt{164}}{16}$ and $\frac{6-\sqrt{164}}{16}$

$x = 1.18$ and -0.43

Solve. Express your answer in simplest radical form.

11. $0 = 4p^2 + 2p - 18$

$a = 4$, $b = 2$, $c = -18$

$p = \frac{-2 \pm \sqrt{2^2 - 4(4)(-18)}}{2(4)} = \frac{-2 \pm \sqrt{292}}{8} =$

$\frac{-2 \pm \sqrt{4}\cdot\sqrt{73}}{8} = \frac{-2 \pm 2\sqrt{73}}{8} = \frac{-2}{8} \pm \frac{2\sqrt{73}}{8}$

$p = -\frac{1}{4} \pm \frac{\sqrt{73}}{4}$

12. $5 = -4h^2 - 5h$

$-5 \quad -5$

$0 = -4h^2 - 5h - 5$

$a = -4$, $b = -5$, $c = -5$

$h = \frac{5 \pm \sqrt{(-5)^2 - 4(-4)(-5)}}{2(-4)} = \frac{5 \pm \sqrt{-55}}{-8}$

NO SOLUTION

13. $11w^2 - 11w - 1 = 15$

$-15 \quad -15$

$11w^2 - 11w - 16 = 0$

$a = 11$, $b = -11$, $c = -16$

$w = \frac{11 \pm \sqrt{(-11)^2 - 4(11)(-16)}}{2(11)} = \frac{11 \pm \sqrt{825}}{22} =$

$\frac{11 \pm \sqrt{25}\cdot\sqrt{33}}{22} = \frac{11 \pm 5\sqrt{33}}{22} = \frac{11}{22} \pm \frac{5\sqrt{33}}{22}$

$w = \frac{1}{2} \pm \frac{5\sqrt{33}}{22}$

14. $2a^2 - 5 = 9a$

$-9a \quad -9a$

$2a^2 - 9a - 5 = 0$

$a = 2$, $b = -9$, $c = -5$

$a = \frac{9 \pm \sqrt{(-9)^2 - 4(2)(-5)}}{2(2)} = \frac{9 \pm \sqrt{121}}{4} =$

$\frac{9 \pm 11}{4} = \frac{9+11}{4}$ and $\frac{9-11}{4}$

$= \frac{20}{4}$ and $\frac{-2}{4}$

$a = 5$ and $-\frac{1}{2}$

SKILLZ REVIEW

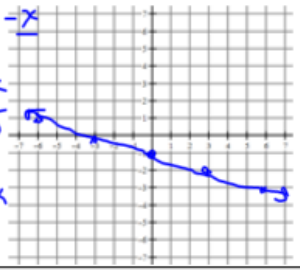
GRAPH

1. $x + 3y = -3$

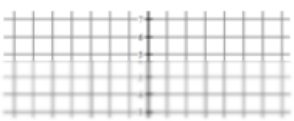
$-x \quad -x$

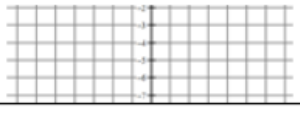
$\frac{3y}{3} = \frac{-3-x}{3}$

$y = -1 - \frac{1}{3}x$



4. $y = x$





FACTOR

2. $x^2 - 2x - 15$

$(x-5)(x+3)$

5. $2x^3 + 10x^2 - 100x$

RADICALS

3. Simplify $\sqrt{80}$

$\sqrt{16}\cdot\sqrt{5}$

$4\sqrt{5}$

6. Simplify $\frac{\sqrt{3}}{\sqrt{2}}$

TRY THESE!

IF YOU CAN'T GET THEM, WATCH THE SKILLZ REVIEW VIDEO FOR HELP!