11/28/11

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Algebra II

B3

Forms

$y = ax^2 + bx + c$ (standard form) * (find aos).

$y = 3x^2 + 4x - 1$ [$-b/2a$ works here]

$y = a(h - x)^2 + k$ (vertex form) * (you know where vertex is).

$y = a(x - h)^2 + k$

$y = 2(x - 1)^2 + 1$

$y = a(x - p_1)(x - p_2)$ (intercept form)

$y = 1(x - 1)(x - 1)$

Graph: $y = 2(x - 1)^2 + 1$

Aos: $\frac{-b}{2a}$ [vertex] ← (1 is not in standard form, need $-b$ be!; is in vertex form)

$a(x - h)^2 + k$ (1, 1)

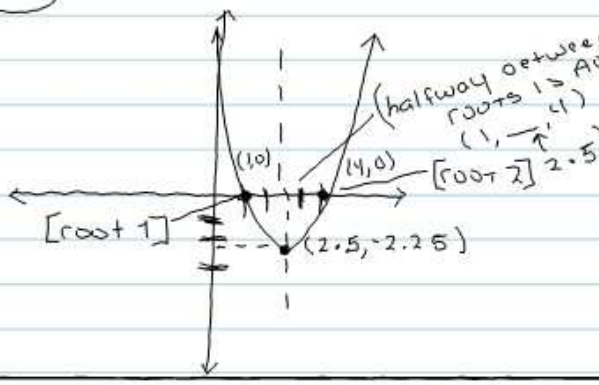
1 AOS is at "1"

intercept form

$y = a(x - p_1)(x - p_2)$ $y = (1(x - 1)(x - 1))$ find roots → they are solutions on x-a

$x - 1 = 0 \longrightarrow x = 1$ .5 x -1.5 -(-2.25)

$x - 1 = 0 \longrightarrow x = 1$



Solving Quadratic Functions using Square roots

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Algebra II

$8^2 = 64$ $\quad (-8)^2 = 64$ $\quad \sqrt{64} = \pm 8$ *(when you take the square root there will always be a Probability of a + or - answer)

Product Property of Radicals

$\sqrt{ab} = \sqrt{a} \cdot \sqrt{b}$

[4.2 / 1.8]

$\sqrt{8} = \sqrt{4} \cdot \sqrt{2} \Rightarrow 2\sqrt{2}$

$\downarrow (2\sqrt{2})$ $\qquad \downarrow$

2.82 $\qquad 2(1.414) = 2.82$

$\sqrt{24}$ → 2

$\sqrt{6} \cdot \sqrt{4}$

$\sqrt{3} \cdot \sqrt{2} \cdot \sqrt{4}$

$\downarrow$

$2\sqrt{6}$ (2)

$\sqrt{\sqrt{24}}$

$\sqrt{8}\sqrt{3}$

$\sqrt{4}\sqrt{6}$

$\sqrt{12}\sqrt{2}$

$\wedge$

$\sqrt{4}\sqrt{3}\sqrt{2}$

6/4

12/2

all of these are similar

ex:

$\sqrt{15}\ \sqrt{3}$

$\wedge$

$\sqrt{3}\ \sqrt{5}\ \sqrt{3}$

$\sqrt{3}\ \sqrt{3}\sqrt{5}$

$\vee$

$3\sqrt{5}$

$\sqrt{14} \cdot \sqrt{7}$

$\sqrt{7}\ \sqrt{2}\ \sqrt{7}$

$7\sqrt{2}$

* [to find $\sqrt{24}$, $\sqrt{4}$ and $\sqrt{6}$ would give you your answer of $2\sqrt{6}$ faster than the other equations.]

Quotient Property of Radicals

ex:

$\sqrt{\frac{a}{b}} = \frac{\sqrt{a}}{\sqrt{b}}$ $\qquad \sqrt{\frac{25}{4}} = \frac{\sqrt{25}}{\sqrt{4}} = \frac{5}{2}$ $\qquad \sqrt{\frac{24}{4}}$ $\quad \frac{\sqrt{24}}{\sqrt{4}} = \frac{\sqrt{4}\sqrt{6}}{\sqrt{4}} = \sqrt{6}$

$\sqrt{\frac{32}{2}}$ $\quad \frac{\sqrt{16}\cdot\sqrt{2}}{\sqrt{2}} = \sqrt{16} = 4$ $\quad \frac{\sqrt{8}\cdot\sqrt{4}}{\sqrt{2}}$ $\quad \frac{2\sqrt{8}}{\sqrt{2}} = \frac{2\sqrt{4}\sqrt{2}}{\sqrt{2}} = 4$

$\sqrt{\frac{20}{6}} \cdot \sqrt{\frac{10}{5}}$

$\frac{\sqrt{20}}{\sqrt{6}} \cdot \frac{\sqrt{10}}{\sqrt{5}} = \frac{\sqrt{200}}{\sqrt{30}}$ $\quad \frac{\sqrt{40}\cdot\sqrt{5}}{\sqrt{6}\cdot\sqrt{5}}$ $\quad \frac{\sqrt{40}}{\sqrt{6}}$ $\quad \frac{\sqrt{20}\sqrt{2}}{\sqrt{3}\sqrt{2}}$ $\quad \frac{\sqrt{20}}{\sqrt{3}}$

B3 Algebra II

Add and Subtract

$2x + x + 3x + x = 7x$

← treat radicals like variables

$2\sqrt{3} + \sqrt{3} + 3\sqrt{3} + \sqrt{3} = 7\sqrt{3}$

$2 + 1 + 3 + 1$

$2x + y + 3x + y = 5x + 2y$

$2\sqrt{3} + \sqrt{2} + 3\sqrt{3} + \sqrt{2} = 5\sqrt{3} + 2\sqrt{2}$

$2\sqrt{2} - \sqrt{2} + 3\sqrt{3} - \sqrt{3} + \sqrt{2} = 2\sqrt{2} + 2\sqrt{3}$

$\sqrt{2}$ $\quad 2\sqrt{3}$ $\quad \sqrt{2}$

~~$x^2 + 6$~~ $= x^2 + 4 = 40$

$x^2 - 36 = 0$

$x^2 - 36 = (x+6)(x-6)$

$ax^2 + bx + c$

$x^2 - 36 = 0$

$+36$

$\sqrt{x^2} = \sqrt{36}$

$x = 6$

$x = -6$

$2x^2 - 2 = 6$

$x = 6 \pm$

$\frac{2\sqrt{2}x^2}{2} = \frac{8}{2}$

$5x^2 + 9 = 14$

$x^2 = \pm 1$

$\sqrt{x^2} = \sqrt{4}$

$x = \pm 2$ roots $= (2, -2)$

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

$-5 \quad -5$

$\frac{2}{2}(x-3)^2 = -5/2$ $\quad (x-3)^2 = -5/2$ $\quad x - 3 = \pm\sqrt{-5/2}$

$x = 3 \pm \sqrt{-5/2}$