Warm Up

Given the following quadratic : $y = 3(x+2)^2 - 3$ (Standard)

- Express the quadratic in transformational and general form
- Write a mapping rule that maps the graph of $y = x^2$ to this graph
- State the coordinates of the vertex
- State the equation of the axis of symmetry
- Sketch this function

Transformational

$$\frac{1}{3}(y+3) = (x+2)^2$$

General

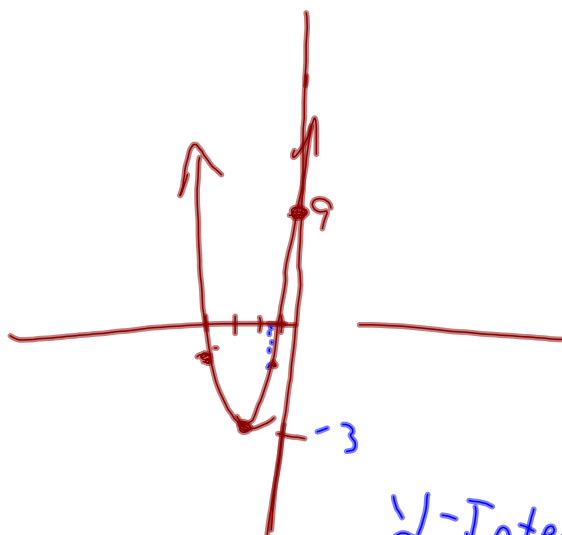$$y = 3(x^2 + 4x + 4) - 3$$

$$y = 3x^2 + 12x + 9$$

Mapping:

$$(x, y) \longrightarrow (x - 2, 3y - 3)$$

Vertex: $(-2, -3)$

Axis of Symmetry

$$x = -2$$

Sketch:

Domain:

$$\{x \mid x \in \mathbb{R}\}$$

Range:

$$\{y \mid y \geq -3, y \in \mathbb{R}\}$$

y-Intercept $(x = 0)$

$$y = 9$$

$$(0, 9)$$

1

Completing the Square

Express each of the following in standard form:

1. $y = 1x^2 - 14x$

$y = \left(x^2 - 14x + \underline{49}\right) - 49$

$\left(\frac{1}{2}\text{ & square}\right)$

$y = 1(x - 7)^2 - 49$

2. $y = x^2 + 6x - 5$

$y = \left(x^2 + 6x + \underline{9}\right) - 5 - 9$

$y = (x + 3)^2 - 14$

(Show multiple methods that could be used)

3. $y = -x^2 + 2x + 7$

$y = -1\left(x^2 - 2x + \underline{1}\right) + 7 + 1$

$y = -1(x - 1)^2 + 8$

$V(1, 8)$

4. $y = 4x^2 - 32x + 1$ $+64$

$y = 4\left(x^2 - 8x + \underline{16}\right) + 1 - 64$

$y = 4(x - 4)^2 - 63$

OR

$\frac{y}{4} = x^2 - 8x + \frac{1}{4}$

$\frac{y}{4} = \left(x^2 - 8x + \underline{16}\right) + \frac{1}{4} - \frac{16}{1}$

$(4) \quad \frac{y}{4}^{(4)} = (x - 4)^2 - \frac{63}{4}(4)$

$\boxed{y = 4(x - 4)^2 - 63}$

Now that we have the method down...let's have some FUN!!!!

$-8x \frac{1}{100} = \frac{-1}{20}$

$\left(\frac{1}{2} \text{ of } \frac{1}{5}\right) = \left(\frac{1}{10}\right)^2$

5. $y = -5x^2 + 1x - 7$

6. $y = 2x^2 - \dfrac{1}{3}x + 2$ $\left(\frac{2}{144}\right)$

$y = -\dfrac{5}{1}\left(x^2 - \dfrac{1}{5}x + \dfrac{1}{100}\right) - \dfrac{7}{1} + \dfrac{5}{100}$

$\left. \begin{array}{c} \dfrac{-7}{1} + \dfrac{1}{20} \end{array} \right\}$

$y = 2\left(x^2 - \dfrac{1}{6}x + \dfrac{1}{144}\right) + \dfrac{2}{1} - \dfrac{1}{72}$

$y = -5\left(x - \dfrac{1}{10}\right)^2 - \dfrac{695}{100}$

$y = -5\left(x - \dfrac{1}{10}\right)^2 - \dfrac{139}{20}$

$y = 2\left(x - \dfrac{1}{12}\right)^2 + \dfrac{143}{72}$

$\boxed{1\frac{71}{72}}$

7. $y = -\dfrac{3}{5}x^2 + \dfrac{1}{2}x - 4$ $+ \dfrac{75}{720}$

$y = -\dfrac{3}{5}\left(x^2 - \dfrac{5}{6}x + \dfrac{25}{144}\right) - \dfrac{4}{1} + \dfrac{5}{48}$

$y = -\dfrac{3}{5}\left(x - \dfrac{5}{12}\right)^2 - \dfrac{192}{48} + \dfrac{5}{48}$

$y = -\dfrac{3}{5}\left(x - \dfrac{5}{12}\right)^2 - \dfrac{187}{48}$

3

HOMEWORK...

Worksheet - General to Standard.doc

Pick ANY 10

Attachments

Worksheet - General to Standard (a not 1).doc