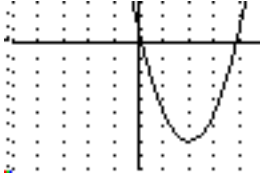1   Find the vertex for $f(x) = 2x^2 - 8x + 1$

The x-coordinate of the Vertex is $-\dfrac{b}{2a} = -\dfrac{-8}{2(2)} = \dfrac{8}{4} = 2$

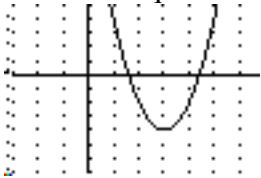To find the y-coordinate of the Vertex, we evaluate: $f(2) = 2(4) - 8(2) + 1 = 8 - 16 + 1 = -7$

Therefore the coordinates for the Vertex is: (2, -7).

2   The above function does not have a maximum value, but it does have a minimum value. The minimum value of the function is -7.

3   The equation of the axis of symmetry for $f(x) = 2x^2 - 8x + 1$ is: $x = 2$.

4   Write the equation for the graph below in standard form.

The Vertex is at (3, -4).

So far, we can start Vertex form with: $f(x) = a(x - 3)^2 - 4$.

The number a represents the vertical stretch or vertical shrink.

We Notice that moving one unit right or left from the vertex requires a vertical climb of 2.

Therefore $a = 2$.

Now the equation becomes: $f(x) = 2(x - 3)^2 - 4$

Further, we get: $f(x) = 2(x^2 - 6x + 9) - 4 \rightarrow$ $\boxed{f(x) = 2x^2 - 12x + 14}$

5   A Quadratic Function has x-intercepts at -5 and 3, with a Vertical Stretch of 3 and Reflected across the x-axis. Write the equation in standard form.

Using intercept form, we start with: $f(x) = a(x + 5)(x - 3)$.

Using the knowledge of the Vertical Stretch and Reflection in the x-axis, we get: $f(x) = -2(x + 5)(x - 3)$.

Now we Simplify: $f(x) = -2(x^2 + 2x - 15) \rightarrow$ $\boxed{f(x) = -2x^2 - 4x + 30}$

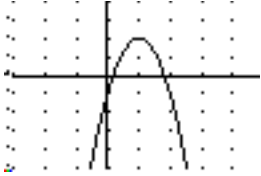6   Find the Vertex for the above Equation.

The x-coordinate for the Vertex is: $-\dfrac{b}{2a} = -\dfrac{-4}{-4} = -1$ So we evaluate: $f(-1)$.

$f(-1) = -2(1) - 4(1) + 30 = -2 - 4 + 30 = 24$. The Vertex is at $\boxed{(-1, 24)}$

NO Calculators

1    $f(x) = 3x^2 - 24x + 2$ Find the Vertex.

2   Write the equation for the graph below in Vertex Form.

3   Convert your answer in #2 to Standard Form.

4   Write the Standard Equation for a Quadratic Function with x-intercepts at 9 and -2 and a Vertical Stretch of 10.

5    $f(x) = 2x^2 - 3x + 4$ must be Translated Left by 2 Units, then Translated down by 1 Unit, then Vertically Stretched by a factor of 5. Show each step of the Transformation.

a

b

c

6   Graph on the Coordinate below showing The Vertex, and 3 other points. $f(x) = \frac{1}{2}(x+1)^2 - 3$.