[redacted]

Good job, Stephen!

MAC1140 SEC29 HW 08-27-2007 3.1

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Due: 08-29-2007

due 8/29/07

Full Name: Stephen Holland Sec#: 29 Extra Credit Attempted? Yes

1.

[3.1.1bPT]The graph of the quadratic function $f(x) = -x^2 + 2x + 8$ has

Two ways:

- ○ 1 x-intercept
- ○ None of these
- ● 2 x-intercepts
- ○ 0 x-intercepts

not recommended

$0 = -x^2 + 2x + 8$

$= -(x^2 - 2x - 8)$

$= -(x-4)(x+2)$

x-intercepts: 4, -2

1° $\Delta = b^2 - 4ac = 4 - 4(-1)(8) = 36 > 0$

2 x-intercepts.

2° Vertex: $(1, 9)$, $a < 0$

2.

[3.1.1cPT]Find the quadratic equation whose graph has vertex at $(-2, 1)$ and an x-intercept of 1

Vertex:

- (−2, −1) ○ $y = \frac{1}{9}(x+2)^2 - 1$
- (−2, 1) ● $y = -\frac{1}{9}(x+2)^2 + 1$
- (2, 1) ○ $y = -(x-2)^2 + 1$
- (1, −2) ○ $y = (x-1)^2 - 2$
- (2, −1) ○ $y = (x-2)^2 - 1$

$y = -\frac{1}{9}(x+2)^2 + 1$

$(h, k) \to (-2, 1)$

Because when you plug 0 in for y you find the x-intercept, if the x-intercept is 1, than $0 \overset{?}{=} -\frac{1}{9}(1+2)^2 + 1$ should hold true

$0 = -1 + 1$

$0 = 0$ ✓

Good check.

3.

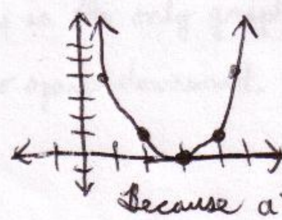
[3.1.2bPT]The quadratic function $f(x) = x^2 - 6x + 9$ has

- ● a minimum value of 0
- ○ a maximum value of -3
- ○ a minimum value of 3
- ○ a maximum value of 36

$h = \frac{-b}{2a} = \frac{6}{2(1)} = 3$

$k = f(3) = 9 - 18 + 9 = 0$

$(h, k) \to (3, 0)$



Because $a > 0$, the vertex of the parabola is the minimum point on the graph of the function

4.

[3.1.2cPT]$f(x) = a(x-3)^2 - 4$, $a < 0$, has

- ○ a maximum value of 4
- ○ a maximum value of 3

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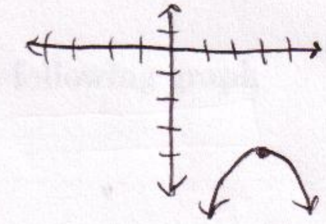
$(h,k) \rightarrow (3,-4)$



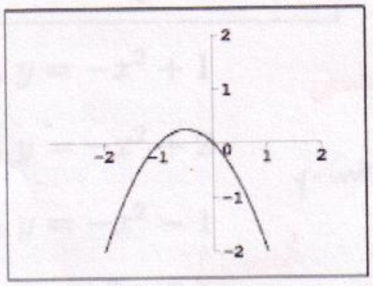
○ a minimum value of -4
○ a minimum value of 3
● a maximum value of -4

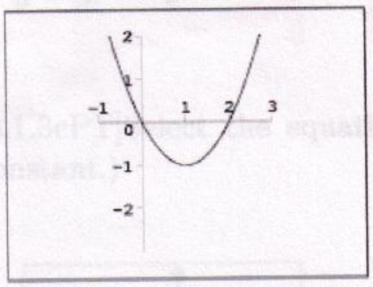
5.

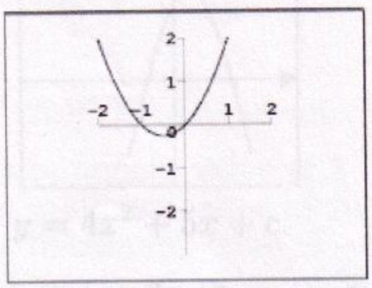
[3.1.3aPT]Select the graph of $y = -x^2 + 2x$.

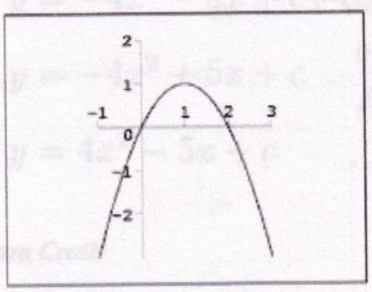
$h = \frac{-b}{2a} = \frac{-2}{-2} = 1$

$f(1) = k = 1$

○ 

○ 

○ 

● 

This is the only graph with vertex $(1,1)$, and it also opens downward.

6.