

BE - Alg. 2 / TUESDAY 3-9-10

① Put the following "general" form of a parabola into "standard" also called "vertex" or "h-k" form. Then find the coordinates of the vertex, focus, and the equation of the directrix (a horizontal line) and Axis - of Symmetry (a vertical line).

$$-3x^2 - 8x - 6 = y$$

- Q4 grading changes.
- Return graded work.

• Exam 3 topics =>

STUDY
GUIDE

QUIZ

1 to 5

plus

EXAM 1

Ch 13-2 Angles & Angle Measure

13-3 Trig. Functions of Any Angle

13-4 Law of Sines

13-5 Law of Cosines

13-6 Graphs of Sin & Cos

13-7 Inverse Trig. Functions

14-3 Trig. Identities

14-4 Verifying Trig Identities

14-1 Graphing Trig. Functions

14-2 TRANSLATIONS OF Trig Functions

* NEWSTUFF

Ch 8-1

Midpoint &

DIST. FORMULA

Ch 8-2

Parabolas

Key points - Parabolas

$$ax^2 + bx + c = y$$

"GENERAL" Form

$a > 0 \nearrow$ $a < 0 \searrow$

$$V\left(-\frac{b}{2a}, f\left(-\frac{b}{2a}\right)\right)$$

$\uparrow$
AOS $\Rightarrow x = -\frac{b}{2a}$

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

"Standard" or "h,k" form

$a > 0 \nearrow$ $a < 0 \searrow$

$$V(h, k)$$

$\uparrow$
AOS $\Rightarrow x = h$

Focus $(h, k + \frac{1}{4a})$

Directrix $\Rightarrow y = k - \frac{1}{4a} \Rightarrow \longleftrightarrow$

Ex $-3x^2 - 8x - 6 = y$

CHANGE TO "h,k" form
By Completing Square

$$V\left(-\frac{8}{6}, f\left(-\frac{8}{6}\right)\right)$$

$$V\left[-\frac{4}{3}, f\left(-\frac{4}{3}\right)\right] = \left(-\frac{4}{3}, -\frac{2}{3}\right)$$

AOS $\Rightarrow x = -\frac{4}{3}$

$\uparrow$
h k

BE CAREFUL

$$-3x^2 - 8x - 6 = y$$

$$-3\left(x^2 + \frac{8}{3}x + \left(\frac{8}{6}\right)^2\right) - 6 - \text{cloud} = y$$

$$-3\left(x + \frac{4}{3}\right)^2 - 6 + \left[3\left(\frac{4}{3}\right)^2\right] = y \quad \rightarrow \quad 3\left(\frac{16}{9}\right) = \frac{16}{3}$$

$$-3\left(x + \frac{4}{3}\right)^2 - \frac{18}{3} + \frac{16}{3} = y$$

$\downarrow$ AOS $\Rightarrow x = -\frac{4}{3}$

$$-3\left(x + \frac{4}{3}\right)^2 - \frac{2}{3} = y$$

$$V\left(-\frac{4}{3}, -\frac{2}{3}\right) \checkmark$$

Focus $= \left(-\frac{4}{3}, k + \frac{1}{4a}\right) = \left(-\frac{4}{3}, -\frac{3}{4}\right)$

Directrix $\Rightarrow y = k - \frac{1}{4a} = -\frac{7}{12}$

Practice for Exam 2

Use the information provided to write the vertex form equation of each parabola.

1) $y = -2x^2 - 20x - 47$

2) $y = -x^2 + 10x - 18$

3) $y = 4x^2 - 40x + 106$

4) $y = \frac{1}{18}x^2 + \frac{2}{9}x - \frac{16}{9}$

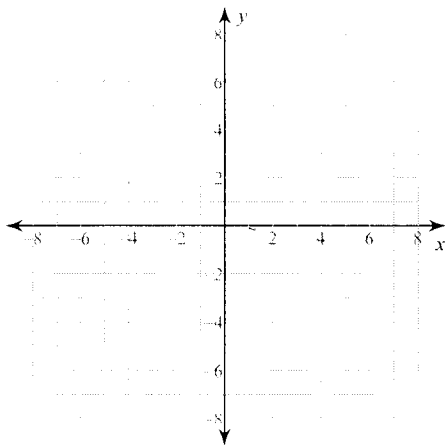
Use the information provided to write the $ax^2 + bx + c = y$ form of the equation of each parabola.

5) $y = -7(x + 6)^2 + 9$

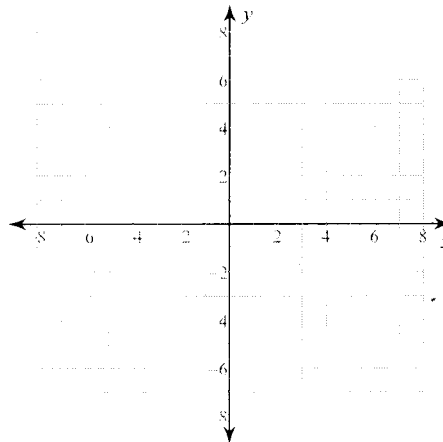
6) $y = -2(x - 6)^2 - 2$

Identify the vertex, focus, axis of symmetry, and directrix of each. Then sketch the graph.

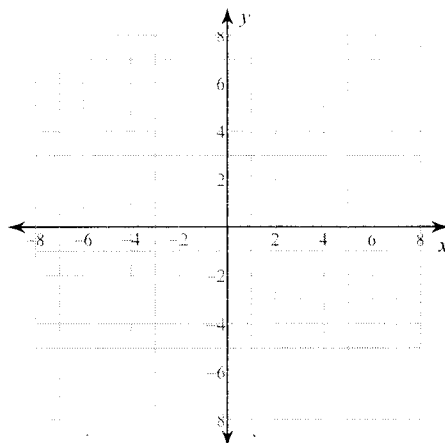
7) $y = -x^2 - 12x - 40$



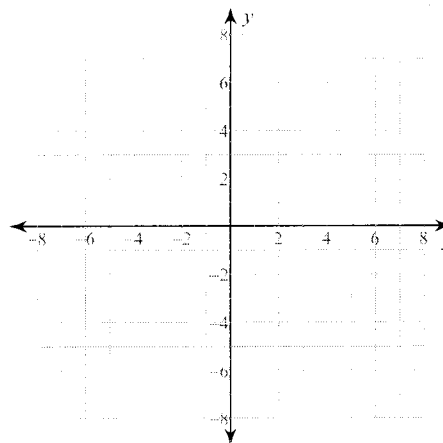
8) $y = -\frac{1}{3}x^2 + 2$



9) $y = -(x - 2)^2 - 5$



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



Answers to Practice for Exam 2

1) $y = -2(x + 5)^2 + 3$

2) $y = -(x - 5)^2 + 7$

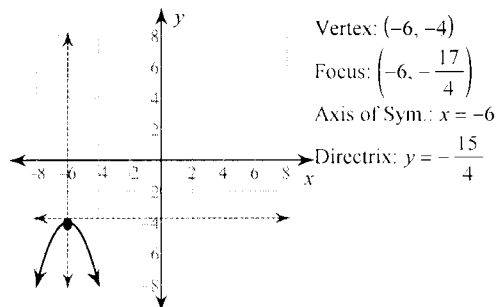
3) $y = 4(x - 5)^2 + 6$

4) $y = \frac{1}{18}(x + 2)^2 - 2$

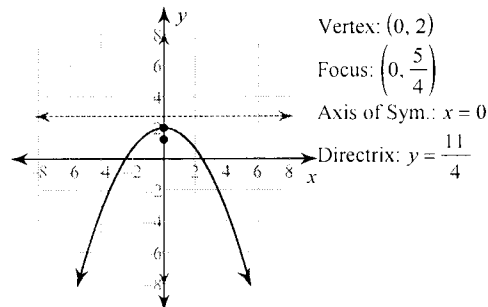
5) $y = -7x^2 - 84x - 243$

6) $y = -2x^2 + 24x - 74$

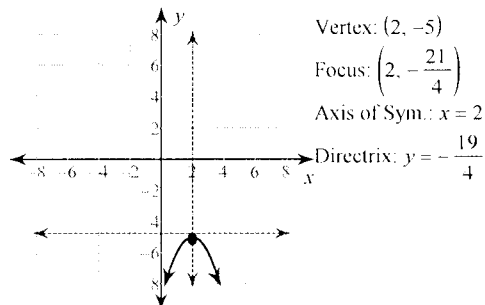
7)



8)



9)



10)

