

# Year 10 – Parabolas Worksheet

1. Determine the following key features of the given graph.

- (a) coordinates of the turning point and whether it is a maximum or minimum.

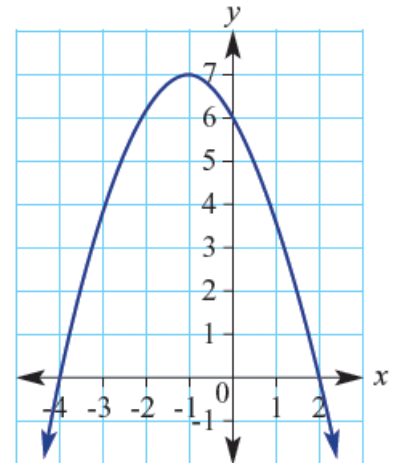
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- (b) equation of the axis of symmetry

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- (c) coordinates of the  $x$ -intercepts

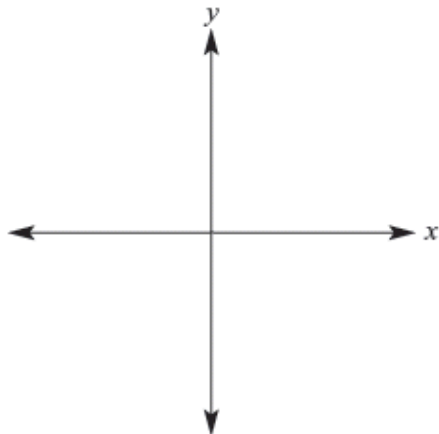
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2. Sketch graphs of the following quadratic relations, labelling the turning point and the  $y$ -intercept.

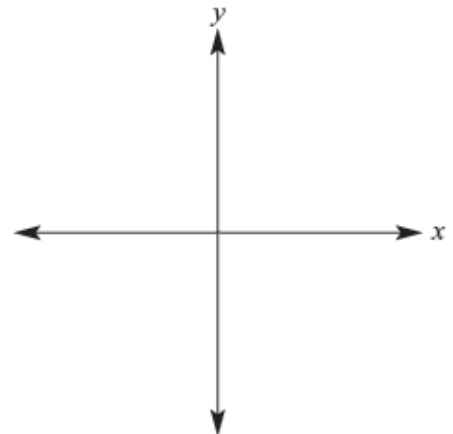
(a)  $y = -2x^2$

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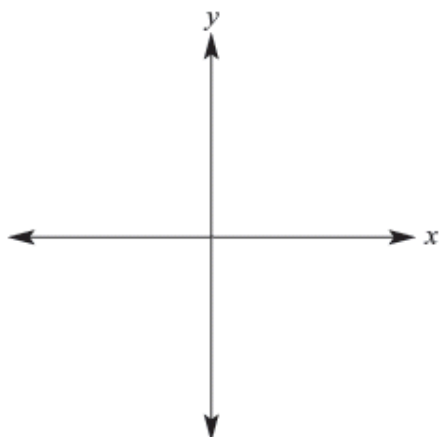
(b)  $y = x^2 - 4$

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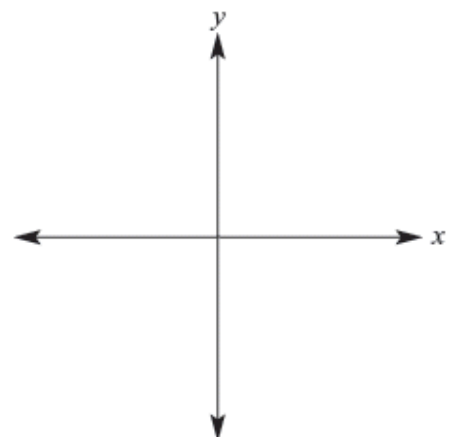
(c)  $y = (x + 3)^2$

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(d)  $y = -(x - 1)^2 + 4$

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3. Find a rule for this parabola with turning point  $(-2, 2)$  and  $y$ -intercept  $(0, 6)$ .

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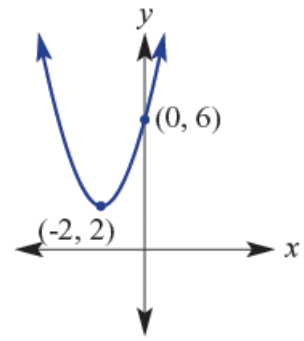
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4. Sketch the graph of the quadratic  $y = x^2 - 6x + 5$  and determine the coordinates of the turning point using symmetry.

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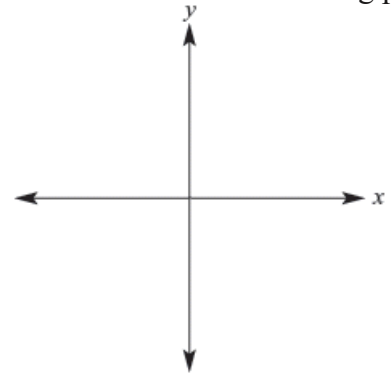
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5. Sketch the graph of the quadratic  $y = x^2 + 4x + 4$ .

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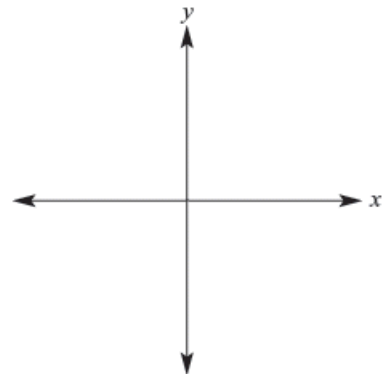
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6. For  $y = -2(x - 1)^2 + 8$ :

(a) Determine the coordinates of its turning point and state whether it is a maximum or minimum.

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(b) Determine the  $y$ -intercept.

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(c) Determine the coordinates of the  $x$ -intercepts (if any).

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7. Complete the square for  $y = x^2 + 6x + 2$ .