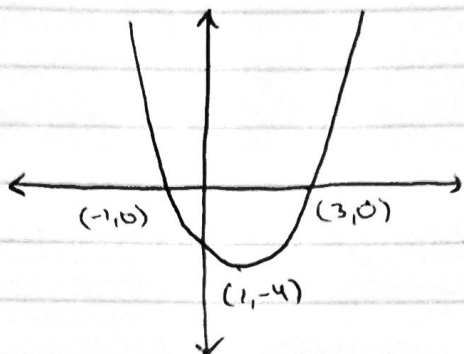


Name That Graph

1.



Clues:

- quadratic (x^2).
- Minimum at $x=1$
- Roots (ie. $x=3, x=-1$).

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

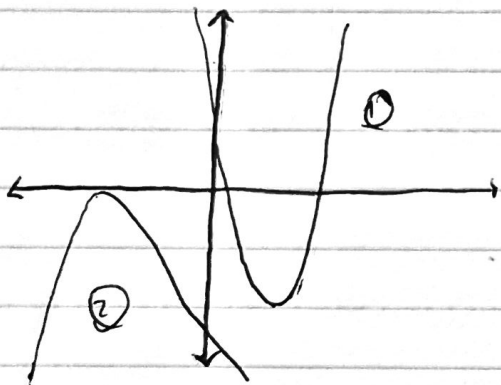
$x=-1$ $x=3$

when $x=1$

$$y = (1)^2 - 2(1) - 3 = 1 - 5 = -4 \quad \text{so minimum checked at } (1, -4).$$

Function:

$$f(x) = x^2 - 2x - 3$$



- ① y-intercept at 8
roots at $x=1$ and $x=3$.
minimum at $x=2$

- ② negative quadratic
one root at $x=-3$
y-intercept at -6

① $y = (x-1)(x-3) = x^2 - 4x + 3$

when need a y-intercept at 8, not at 3, so we multiply everything by $\frac{8}{3}$:

$$y = \frac{8}{3}x^2 - \frac{32}{3}x + 8.$$