Taking a Closer Look!

Graph: $y = x^2 + 2x - 8$

1. Is it a function? YES

2. Domain: $(-\infty, \infty)$

3. Range: $[-9, \infty)$

4. $x$-intercept(s): $\{-4, 2\}$

5. $y$-intercept(s): $\{-8\}$

6. Symmetry: $x = -1$ axis of symmetry

7. Where is the graph increasing? $[-1, \infty)$

8. Where is the graph decreasing? $(-\infty, -1]$)

9. Where is $y < 0$? $(-4, 2)$

10. Where is $y > 0$? $(-\infty, -4) \cup (2, \infty)$

11. Where is $y = 0$? $x = -4, x = 2$

12. Find $y$ when $x = 12$. 160

13. For what $x$-value(s) is $y = 7$? $x = -5, x = 3$

14. Maximum value of graph: none – (absolute maximum) approaches $\infty$

15. Minimum value of graph: $y = -9$ (absolute minimum)

16. Asymptote(s): None (state equation(s))

Assuming $y = f(x)$:

17. as $x \to +\infty$, $f(x) \to +\infty$_______

18. as $x \to -\infty$, $f(x) \to ____ +\infty$

19. Name given to this graph: parabola