Answers to WIR 2 Review Problems

1. a.) \( y = 6 - 4x \), D: all reals, R: all reals

2. a.) The object is located at the point (6, 8)

3. \( x = -3t, y = 3 + 2t \) Answer not unique.

4. The lines intersect at the point \( \left( \frac{2}{5}, \frac{36}{5} \right) \)

5. \( x = 1 - 4t, y = 5 + t \) Answer not unique.

6. a) 4
   b) 3
   c) Does not exist
   d) 2
   e.) \( \infty \)
   f.) 7

7. \( \infty \)
8. $x = -1$ is a vertical asymptote; 
\[
\lim_{x \to -1^-} f(x) = -\infty; \quad \lim_{x \to -1^+} f(x) = \infty.
\]
Note: there is an open hole in the graph of $f(x)$ at the point $(7, \frac{1}{8})$.

9. $-1$

10. $-\frac{1}{3}$

11. $\frac{2}{\sqrt{3}}$

12. $-\frac{1}{9}$

13. The limit does not exist because 
\[
\lim_{x \to 2^+} f(x) = -\infty \quad \text{while} \quad \lim_{x \to 2^-} f(x) = \infty
\]

14. $\frac{1}{2}$

15. The limit does not exist because 
\[
\lim_{x \to 3^+} f(x) = 17 \quad \text{while} \quad \lim_{x \to 3^-} f(x) = 5
\]

16. The limit does not exist because 
\[
\lim_{x \to 2^+} f(x) = 1.5 \quad \text{while} \quad \lim_{x \to 2^-} f(x) = -1.5
\]

17. $-\infty$

18. Note there is an open circle at the point $(4, 1)$ and $(4, -1)$. The limit does not exist at $x = 4$ because 
\[
\lim_{x \to 4^+} f(x) = 1 \quad \text{while} \quad \lim_{x \to 4^-} f(x) = -1
\]

19. $4$

20. $0$