Functions Worksheet 1 - Answers

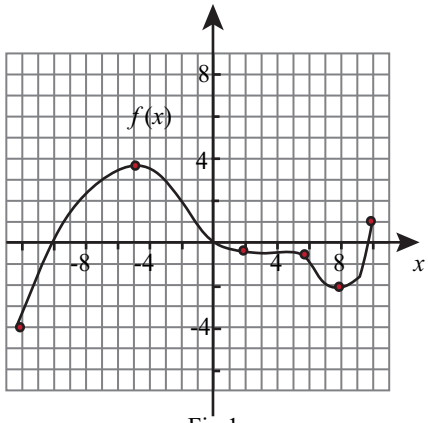

Fig 1

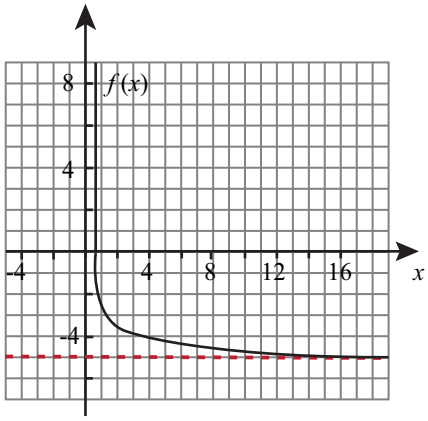

Fig 2

1. Given the graph of function $f(x)$ in Fig 1, find the intervals where $f(x)$ is increasing/decreasing.
   Increasing: $(-12,-5)\cup(8,10)$, Decreasing: $(-5,2)\cup(6,8)$.

2. Referring to the function $f(x)$ in Fig 1, find the x and y intercepts of the function. x-intercept: $-10, 0$ and y-intecept: 0.

3. Give an equation of a function for which $y > 0$ for all values of x.
   Ans: $y = x^2+1$, $y = |x|+1$, and $y = 3$.

4. Find the equation of a parabola with x-intercepts at $(-1,0)$ and $(3,0)$ and y-intercept at $(0,-1)$.
   Ans: $y = \frac{1}{3}x^2 - \frac{2}{3}x - 1$.

5. Find the period of the function $g(x) = \cos(t^2 - 7\pi)$?
   Ans: $3\sqrt{\pi}$.

6. Describe the end behaviour of $f(x) = x^3 - 2x^2 - 8x$.
   Ans: As $x \to \infty$, $f(x) \to \infty$ and $x \to -\infty$, $f(x) \to -\infty$.

7. Find the maxima/minima of the function $f(x) = 5x^2 + 7x + 15$.
   Ans: The function has minimia at $x = -\frac{7}{10}$.

8. Find the intercepts and asymptote of the function $f(x) = \frac{1}{2x} - 5$ for $x > 0$.
   Ans: x-intercept $= 0.1$, and horixontal asymptote $y = -5$.

9. Plot the function in the grid provided above (Fig 2).

10. Find the axis of symmetry of $f(x) = -6x^2 + 7x + 5$.
    Ans: $x = \frac{7}{12}$.
