The following questions are of multiple choice type. Circle the correct answer.

1. The indicated box (see figure) has an open top, a square base with edge length \( x \) inches, and a volume of 500 in\(^2\). Express the total surface area \( S \) of the box (bottom and four sides) as a function of \( x \).

Ans. (a) \( S = x^2 + y^2 \) \hspace{1cm} (b) \( S = x^2y \) \hspace{1cm} (c) \( S = 2x^2 + \frac{1000}{x} \) \hspace{1cm} (d) \( S = x^2 + \frac{2000}{x} \) \hspace{1cm} (e) \( S = 2x^2 + \frac{1000}{x} \) \hspace{1cm} (f) \( S = x^2 + \frac{500}{x} \)

The correct answer is (d).

2. Write an equation for the line that passes through the point (0,2) and is parallel to the line segment from the point (-1,4) to the point (3,-2).

Ans. (a) \( y = \frac{2}{3}x + 2 \) \hspace{1cm} (b) \( y = -\frac{2}{3}x - 2 \) \hspace{1cm} (c) \( y = -\frac{3}{2}x - 2 \) \hspace{1cm} (d) \( y = -\frac{2}{3}x + 2 \) \hspace{1cm} (e) \( y = -\frac{3}{2}x + 2 \) \hspace{1cm} (f) \( y = \frac{3}{2}x - 2 \)

The correct answer is (e).

3. Find the vertex of the parabola \( y = x^2 - 4x + 3 \). Does the parabola open up or down?

Ans. (a) vertex = (-4,3), up \hspace{1cm} (b) vertex = (2,-1), up \hspace{1cm} (c) vertex = (-2,3), up \hspace{1cm} (d) vertex = (-1,2), up \hspace{1cm} (e) vertex = (-2,-1), up \hspace{1cm} (f) vertex = (2,-1), down

The correct answer is (b).
In each of the following problems you are to match the graph of the given function to one of those displayed at the bottom of the page. Indicate the letter of your choice in the space provided.

4. Which of the following corresponds to the graph of $f(x) = 1 + 4x - x^3$? Ans. __F__

5. Which of the following corresponds to the graph of $f(x) = 3 - 2^{-x}$? Ans. __B__