1. Write the equation of the line passing through the points $(-1, \frac{1}{2})$ and (2,2):

   a. $y = 2x - 2$ b. $x - 2y + 2 = 0$ c. $x + 2y = 2$

   d. $y = \frac{1}{2}x$ e. $y = \frac{1}{2}x - \frac{1}{4}$

2. Find the equation of the line with the slope 4 passing through the point $(-2, 3)$.

   a. $y = 4x - 14$ b. $y = 4x + 14$ c. $y = -2x + 4$

   d. $y = 3x + 4$ e. $y = 4x + 11$

3. The product of the roots of the equation $2x^2 - 6x + 3 = 0$ is

   a. 1.5   b. -1.5   c. -3 d. 3   e. $\frac{2}{3}$

4. Find the domain of $f(x) = \frac{1}{\sqrt{x + 3}}$

   a. $x \geq -3$ b. all reals   c. $x \neq 3$ d. $x \neq -3$ e. $x > -3$

5. The average rate of change of the function $f(x) = x^3 + x + 1$ from 1 to 2 is

   a. 2   b. 1   c. 0   d. 8   e. -1

In problems six through nine compute the limits

6. $\lim\limits_{x \to 2} \dfrac{x^3 + x^2 - 6x}{x - 2}$

7. $\lim\limits_{x \to -2} \dfrac{x^2 - 2x - 8}{x + 2} \quad =$

   a. 1   b. –6 c. 8   d. 0   e. – 4

8. $\lim\limits_{x \to \bullet} \dfrac{2x^2 + 1}{x^2 - x}$

9. $\lim\limits_{x \to 9} \dfrac{x - 9}{\sqrt{x} - 3} \quad =$

   a. 0   b. 3   c. 1   d. –6 e. 6

10. $f(x) = \sqrt{2x}$ $g(x) = 3x - 4$

   Find $f \circ g$ and $g \circ f$. Are they equal?

11. Given $f(x) = \dfrac{2x}{x + 1}$ and $g(x) = \dfrac{x - 1}{x + 2}$ express $f(x) + g(x)$ as a rational function.

   a. $\dfrac{3x^2 + 4x - 1}{x^2 + 3x + 2}$ b. $\dfrac{x^2 + 5x + 2}{x^2 + 2x}$

   c. $\dfrac{2x^2 - 1}{x^2 + 3}$ d. $\dfrac{3x^2 + 3x - 1}{x^2 + 3x + 2}$ e. $\dfrac{3x - 1}{2x + 3}$

12. Find the coordinates of the points of intersection of the graphs of
   $y_1 = x^2 + x + 1$ and $y_2 = -x + 1$

a. (0,1)   b. (0,1),(2.7)   c. ($\sqrt{2}$,3 + $\sqrt{2}$), (– $\sqrt{2}$,3 – $\sqrt{2}$)   d. none

e. (0,1), (–2,3)

13. Find all the solutions of the equation $x^3 - 4x^2 + x + 6 = 0$

14. Simplify the following expression:

$$\left(\frac{5^3 \ \sqrt{5}}{5^{3/2}}\right)^{1/2}$$

a. $\sqrt{5}$ b. 5   c. 1   d. $5^{5/2}$ e. 25

15. Given $f(x) = |x^2 - 1|$ evaluate $f(0)$, $f(\sqrt{2}$), $f(-\sqrt{2}$)

a. –1,1,1   b. –1, –1, –1   c. 1,1,1   d. –1,1,–3   e. 1,1,3

16. Sketch the graph of the function $y = \frac{x-3}{4-x}$

17. Let a, b, c be real numbers. compute the slope of the line tangent to the graph of $f(x) = ax^2 + bx + c$ for x equal to u.

18. Which of the following curves are graphs of functions?

1   2

3   4

a. 2,4   b. None   c. All of them   d. 1, 2   e. 2,3,4