1. What is the average rate of change of the function $f(x) = 6x - 3$ between $x = 9$ and $x = 10$?

   a) 3
   b) 5
   c) 6
   d) 9
   e) 7

2. Determine the equation which expresses that N is proportional to k and inversely proportional to P and y where a, b and c are constants.

   a) $N = \frac{ay}{kP}$
   b) $N = \frac{a}{bc}$
   c) $N = \frac{ck}{Ny}$
   d) $N = \frac{bP}{yk}$
   e) $N = \frac{ck}{yP}$

3. For the function $f(x) = 5x^2 + 2$, find $\frac{f(a+h) - f(a)}{h}$ where $h \neq 0$.

   a) $15h + 10a$
   b) $5h + 20a$
   c) $10h + 5a$
   d) $5h + 10a$
   e) $5h + 5a$

4. A father is four times as old as his daughter. In 4 years, he will be three times as old as she is in 4 years. How old is the daughter now?

   a) 5 years old
   b) 3 years old
   c) 8 years old
   d) 4 years old
   e) 12 years old

5. Find all solutions of the equation $7x^2 - 28x + 56 = 0$.

   a) $x = 8 + 8i, x = 8 - 8i$
   b) $x = 7, x = 56$
   c) $x = 2 + 2i, x = 2 - 2i$
   d) $x = 2 + 3i, x = 2 - 3i$
   e) $x = 2, x = -2$

6. It took a crew 6 hours 24 minutes to row 19.2 km upstream and back again. If the rate of flow of the stream was 4 km/h, what was the rowing rate of the crew in still water?

   a) 6 km/h
   b) 8 km/h
   c) 10 km/h
   d) 11 km/h
   e) 12 km/h

7. For $f(x) = x^4 + 2, g(x) = x - 4$, and $h(x) = \sqrt{x}$, find $(f \circ g \circ h)(x)$.

   a) $x^4 + x - 2 + \sqrt{x}$
   b) $(x^4 + 2)(x - 4)\sqrt{x}$
   c) $(\sqrt{x} - 2)^4$
   d) $(\sqrt{x} - 4)^4 + 2$
   e) $\sqrt{x^4 - 2}$

8. If the points $P(7, 2), Q(0, 9)$ and $R(-7, 2)$ are drawn on a coordinate plane, where must the point S be located so that the figure $PQRS$ is a square?

   a) $(0, -5)$
   b) $(0, -6)$
   c) $(-5, 0)$
   d) $(0, -4)$
   e) $(-7, 0)$

9. Find all real solutions of the equation $(x + 8)^2 = 4$.

   a) $x = -10, x = 10$
   b) $x = 6, x = 10$
   c) $x = 2, x = -2$
   d) $x = -2, x = 4$
   e) $x = -6, x = -10$

10. Find the inverse function of $f(x) = \frac{1}{x + 3}$.

    a) $f^{-1}(x) = \frac{1}{x} - 3$
    b) $f^{-1}(x) = \frac{1}{x - 3}$
    c) $f^{-1}(x) = x - 3$
    d) $f^{-1}(x) = \frac{1}{x} + 3$
    e) $f^{-1}(x) = x + 3$

11. Find the center and radius of the circle with the equation $x^2 + y^2 + 8x = 0$.

a) center $(4, 0)$, radius 16

b) center $(-4, 0)$, radius 6

c) center $(-4, 0)$, radius 4

d) center $(0, -4)$, radius 16

e) center $(-4, 0)$, radius 7

12. Determine the correct area for the triangle formed by the coordinate axes and the line $6x + 8y - 48 = 0$.

a) 24

b) 22

c) 25

d) 23

e) 26

13. Find all real solutions of the equation $(x+1)^2 - 6(x+1) + 8 = 0$.

a) $x = 3, x = -2$

b) $x = 3, x = -1$

c) $x = 6, x = 2$

d) $x = 3, x = 1$

e) $x = 6, x = -8$

14. Find the maximum value of the function $f(x) = -4x^2 + 16x - 50$.

a) 2

b) 34

c) -34

d) -2

e) -29

15. Solve $\frac{1}{8} < \frac{2x-9}{16} \leq \frac{3}{4}$.

a) $\left[-\frac{11}{2}, \frac{21}{2}\right)$

b) $\left(\frac{1}{2}, \frac{13}{2}\right]$

c) $\left(\frac{3}{2}, \frac{5}{2}\right]$

d) $\left[-\frac{1}{2}, \frac{13}{2}\right)$

e) $\left(\frac{11}{2}, \frac{21}{2}\right]$

16. Solve $|x + 8| \geq 6$.

a) $(-\infty, \infty)$

b) $(-\infty, -14) \cup (-2, \infty)$

c) $[-14, -2]$

d) $(-\infty, -14] \cup [-2, \infty)$

e) $[-2, \infty)$

17. Solve $x^2 - 4x - 5 = 0$.

a) $x = -5, x = -1$

b) $x = 5, x = 1$

c) $x = 5, x = -1$

d) $x = -5, x = -2$

e) $x = 4, x = 5$

18. Which one of the following equations defines y as a function of x?

a) $x^{24} + (y - 12)^2 = 24$

b) $24y^2 = x$

c) $24x + |y| = 21 + x^2$

d) $27y^4 = x^7$

e) $x^{24}y + y(x - 144) = 11$

19. If the graph of the function $f(x)$ is reflected in the x-axis and then shifted up 5 units, the graph of $g(x) = 5 - x^2$ is obtained. What is $f(x)$?

a) $f(x) = x^2 - 5$

b) $f(x) = x^2 + 5$

c) $f(x) = -x^2 + 5$

d) $f(x) = -x^2$

e) $f(x) = x^2$

20. Determine the correct equation for the line passing through the point $(3, 4)$ which is parallel to the line passing through both of the points $(6, 1)$ and $(-2, 41)$.

a) $y = -5x - 19$

b) $y = -5x + 19$

c) $y = 5x + \frac{1}{19}$

d) $y = -5x - \frac{1}{19}$

e) $y = -5x + \frac{1}{19}$

ITEM NO.	FORM: B
1	C
2	E
3	D
4	C
5	C
6	B
7	D
8	A
9	E
10	A
11	C
12	A
13	D
14	C
15	E
16	D
17	C
18	E
19	E
20	B