

Equations can be written in a form called **FUNCTION NOTATION**.

Example: Equation -----> Function Notation

$$y = 3x - 8$$

$$f(x) = 3x - 8$$

If $f(x) = 3x + 7$ and $g(x) = x^2 - 2x$, find the value of each of the following.

$$\begin{aligned} 1. \quad f(3) &= 3(3) + 7 \\ &= 9 + 7 \\ &= \boxed{16} \end{aligned}$$

$$\begin{aligned} 2. \quad f(-2) &= 3(-2) + 7 \\ &= -6 + 7 \\ &= \boxed{1} \end{aligned}$$

$$\begin{aligned} 3. \quad g(5) &= (5)^2 - 2(5) \\ &= 25 - 10 \\ &= \boxed{15} \end{aligned}$$

$$\begin{aligned} 4. \quad g(0) &= (0)^2 - 2(0) \\ &= 0 - 0 \\ &= \boxed{0} \end{aligned}$$

$$\begin{aligned} 5. \quad g(-3) + 1 &= (-3)^2 - 2(-3) + 1 \\ &= 9 + 6 + 1 \\ &= \boxed{16} \end{aligned}$$

$$\begin{aligned} 6. \quad f(8) - 5 &= 3(8) + 7 - 5 \\ &= 24 + 7 - 5 \\ &= \boxed{26} \end{aligned}$$

$$\begin{aligned} 7. \quad g(2c) &= (2c)^2 - 2(2c) \\ &= \boxed{4c^2 - 4c} \end{aligned}$$

$$\begin{aligned} 8. \quad f(a^2) &= 3(a^2) + 7 \\ &= \boxed{3a^2 + 7} \end{aligned}$$

$$\begin{aligned} 9. \quad f(k+2) &= 3(k+2) + 7 \\ &= 3k + 6 + 7 \\ &= \boxed{3k + 13} \end{aligned}$$

$$\begin{aligned} 10. \quad f(2m-5) &= 3(2m-5) + 7 \\ &= 6m - 15 + 7 \\ &= \boxed{6m - 8} \end{aligned}$$

$$\begin{aligned} 11. \quad 3[g(x) + 4] &= 3[x^2 - 2x + 4] \\ &= \boxed{3x^2 - 6x + 12} \end{aligned}$$

$$\begin{aligned} 12. \quad 2[f(x^2) - 5] &= 2[3(x^2) + 7 - 5] \\ &= 2[3x^2 + 2] \\ &= \boxed{6x^2 + 4} \end{aligned}$$

If $f(x) = 2x - 6$ and $g(x) = x - 2x^2$, find the value of each of the following.

$$\begin{aligned} 13. \quad f(2) &= 2(2) - 6 \\ &= 4 - 6 \\ &= \boxed{-2} \end{aligned}$$

$$\begin{aligned} 14. \quad f\left(\frac{1}{2}\right) &= 2\left(\frac{1}{2}\right) - 6 \\ &= 1 - 6 \\ &= \boxed{-5} \end{aligned}$$

$$\begin{aligned} 15. \quad g(-5) &= -5 - 2(-5)^2 \\ &= -5 - 2(25) \\ &= -5 - 50 \\ &= \boxed{-55} \end{aligned}$$

$$\begin{aligned} 16. \quad g\left(-\frac{1}{3}\right) &= -\frac{1}{3} - 2\left(-\frac{1}{3}\right)^2 \\ &= -\frac{1}{3} - 2\left(\frac{1}{9}\right) \\ &= -\frac{1}{3} - \frac{2}{9} \\ &= \boxed{-\frac{5}{9}} \end{aligned}$$

$$\begin{aligned} 17. \quad f(7) - 9 &= 2(7) - 6 - 9 \\ &= 14 - 6 - 9 \\ &= \boxed{-1} \end{aligned}$$

$$\begin{aligned} 18. \quad g(-3) + 13 &= -3 - 2(-3)^2 + 13 \\ &= -3 - 2(9) + 13 \\ &= -3 - 18 + 13 \\ &= \boxed{-8} \end{aligned}$$

$$\begin{aligned} 19. \quad f(h+9) &= 2(h+9) - 6 \\ &= 2h + 18 - 6 \\ &= \boxed{2h + 12} \end{aligned}$$

$$\begin{aligned} 20. \quad 2[g(b) + 1] &= 2[b - 2(b)^2 + 1] \\ &= 2[b - 2b^2 + 1] \\ &= \boxed{2b - 4b^2 + 2} \end{aligned}$$

21. If $f(x) = 2x$, which of the following statements must be true?

- A. $f(3x) = 3[f(x)]$
- B. $f(x+3) = f(x) + 3$
- C. $f(x^2) = [f(x)]^2$
- D. B and C only
- E. None of the above.

22. If $f(x) = 3x - 2$, find $f(8) - f(-5)$.

- A. 7
- B. 9
- C. 37
- D. 39
- E. None of the above.

$$\begin{aligned} 3(8) - 2 &= (3(-5) - 2) \\ 24 - 2 &= (-15 - 2) \\ 22 &= (-17) \\ &= \boxed{39} \end{aligned}$$