

Match. Not all choices are used. You may need to simplify your answer.

$$f(x) = x^2 + 7 \qquad g(x) = \sqrt{x-3} \qquad h(x) = \frac{x}{x+17}$$

A 1. $f(x) + g(x) = x^2 + 7 + \sqrt{x-3}$

M 2. $h(x) - f(x) = \frac{x}{x+17} - (x^2 + 7) = \frac{x}{x+17} - x^2 - 7$

I 3. $g(f(x)) = g(x^2 + 7) = \sqrt{(x^2 + 7) - 3} = \sqrt{x^2 + 4}$

C 4. $f(g(x)) = f(\sqrt{x-3}) = (\sqrt{x-3})^2 + 7 = x - 3 + 7 = x + 4$

B 5. $f(x)g(x) = (x^2 + 7)\sqrt{x-3}$

G 6. $h(x)g(x) = \frac{x}{x+17}\sqrt{x-3} = \frac{x\sqrt{x-3}}{x+17}$

H 7. $h(g(x)) = \frac{g(x)}{g(x)+17} = \frac{\sqrt{x-3}}{\sqrt{x-3}+17}$

J 8. $\frac{g(x)}{h(x)} = g(x) \cdot \frac{1}{h(x)} = \sqrt{x-3} \cdot \frac{x+17}{x} = \frac{(x+17)\sqrt{x-3}}{x}$

F 9. $g(h(x)) = g\left(\frac{x}{x+17}\right) = \sqrt{\frac{x}{x+17} - 3}$

E 10. $g(g(x)) = g(\sqrt{x-3}) = \sqrt{\sqrt{x-3} - 3}$

A. $x^2 + 7\sqrt{x-3}$

B. $(x^2 + 7)\sqrt{x-3}$

C. $x + 4$

D. $x + 2$

E. $\sqrt{\sqrt{x-3} - 3}$

F. $\sqrt{\frac{x}{x+17} - 3}$

G. $\frac{x\sqrt{x-3}}{x+17}$

H. $\frac{\sqrt{x-3}}{\sqrt{x-3}+17}$

I. $\sqrt{x^2 + 4}$

J. $\frac{(x+17)\sqrt{x-3}}{x}$

K. $\frac{x}{x+17} - x^2 + 7$

L. $x^2 + 7 + \sqrt{x-3}$

M. None of these listed