

Question 1: Rationalize the numerator and simplify: $\frac{\sqrt{x} - 5}{x - 25}$

[3]

Question 2: Simplify: $\frac{\left(1 + \frac{3}{c-3}\right)}{\left(1 - \frac{3}{c-3}\right)}$

[3]

Question 3: Simplify: $\sqrt[4]{\frac{t^{1/2}\sqrt{st}}{s^{2/3}}}$

[4]

Question 4: Do the lines $2x - 3y = 4$ and $x + 3y = 5$ intersect?

[3]

Question 5: Find an equation of the line through $(-3, 5)$ that is parallel to the line $x - 2y = 6$

[4]

Question 6: Find an equation of the line through the points $(2, -4)$ and $(-1, 1)$.

[3]

Question 7: Determine $\sin(5\pi/6) - \tan(5\pi/6)$

[3]

Question 8: If $\sin(\theta) = 3/4$ where $\pi/2 < \theta < \pi$ then determine $\tan(\theta)$

[3]

Question 9: Find all values of x in the interval $[0, 2\pi]$ for which $2\cos^2(x) - 1 = 0$.

[4]

Question 10: Let $f(x) = x^2 - 3x + 3$. Evaluate and simplify the difference quotient $\frac{f(a+h) - f(a)}{h}$.

[6]

Question 11: Determine the domain of $g(x) = \frac{1}{\sqrt{x}} - \sqrt{3-x}$

[4]

Question 12: Express the area A of an equilateral triangle as a function of its perimeter P .

[5]

Question 13: Let $f(x) = \sqrt{x+3}$ and $g(x) = x^2 - 3$. Find $(g \circ f)(x)$ and state the domain.

[3]

Question 14: Let $H(x) = \csc^2(\sqrt{x^2+1})$ and $h(x) = x^2$. Find functions f and g so that $H = f \circ g \circ h$. (There are several possible correct answers.)

[2]
