

Question 1: Simplify: $\frac{1}{x+5} - \frac{1}{x^2-25}$

[3]

Question 2: Rationalize the numerator and simplify: $\frac{\sqrt{x} - \sqrt{y}}{y - x}$

[4]

Question 3: Simplify and state your answer using only positive exponents: $\frac{x^{-1} + y^{-1}}{(x - y)^{-1}}$

[3]

Question 4: The equation of the line through the points $(a, -3)$ and $(-1, -10)$ is $y = 7x - 3$. Determine the value of a .

[3]

Question 5: Solve: $2x^2 = 7x - 2$

[4]

Question 6: Find an equation of the line passing through the point $(1, 1)$ which is parallel to the line $3x + 2y - 7 = 0$.

[3]

Question 7: Determine $\cos(5\pi/3) - \sin(\pi/6)$

[3]

Question 8: If $\sec(\theta) = -5/3$ where $\pi/2 < \theta < \pi$ then determine $\sin(\theta)$

[3]

Question 9: Find all values of x in the interval $[0, 2\pi]$ for which $3 \cot^2(x) = 1$.

[4]

Question 10: Let $f(x) = \frac{1}{x^2}$ and $g(x) = \frac{1}{\sqrt{x+1}}$. Find $(f \circ g)(x)$ and state the domain using interval notation.

[5]

Question 11: Find functions f , g and h so that $f(g(h(x))) = \sec^4(\sqrt{x})$.
(There are several possible correct answers.)

[5]

Question 12: Evaluate the following limit, if it exists: $\lim_{x \rightarrow -2} \frac{x^3 - 2x + 8}{x^2 - 2}$

[2]

Question 13: Evaluate the following limit, if it exists: $\lim_{t \rightarrow 5} \frac{t^2 - t - 20}{t^2 - 9t + 20}$

[4]

Question 14: Evaluate the following limit, if it exists: $\lim_{x \rightarrow 4} \frac{1 - \sqrt{5 - x}}{4 - x}$

[4]
