

Question 1: Simplify: $\frac{2}{a^2} - \frac{3}{ab} + \frac{4}{b^2}$

[3]

Question 2: Solve for x : $2x^2 + 7x = 4$

[3]

Question 3: Simplify: $\frac{x}{x^2 + x - 2} - \frac{2}{x^2 - 5x + 4}$

[4]

Question 4: Simplify: $\frac{\sqrt[5]{96a^6}}{\sqrt[5]{3a}}$

[3]

Question 5: Rationalize: $\sqrt{x^2 + 3x + 4} - x$

[4]

Question 6: Find an equation of the line passing through the point $(2, -7)$ which is perpendicular to the line $2x + 5y - 8 = 0$.

[3]

Question 7: Determine $\tan(4\pi/3) - \cos(-\pi/4)$

[3]

Question 8: If $\cos(\theta) = -1/3$ where $\pi < \theta < 3\pi/2$ then determine $\csc(\theta)$

[3]

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

[4]

Question 10: Determine the domain of $f(x) = \sqrt{3-x} \sin\left(\frac{1}{\sqrt{x-1}}\right)$.

[3]

Question 11: Find functions f , g and h so that $f(g(h(x))) = \frac{4}{1 + \sqrt{x-1}}$.
(There are several possible correct answers. Do not let $h(x) = x$.)

[3]

Question 12: Let $f(x) = x + 4$ and $h(x) = 4x - 1$. Find a function g so that $g \circ f = h$.

[4]

Question 13: Evaluate the following limit, if it exists: $\lim_{x \rightarrow 1} \frac{x - 1}{\sqrt{x + 3} - 2}$

[3]

Question 14: Evaluate the following limit, if it exists: $\lim_{x \rightarrow -3} \frac{x + 3}{x^2 + 4x + 3}$

[3]

Question 15: Evaluate the following limit, if it exists: $\lim_{x \rightarrow 0} \frac{\frac{1}{x - 1} + \frac{1}{x + 1}}{x}$

[4]
