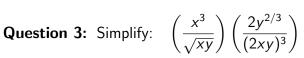
Question 1: Write as a single simplified fraction: $\frac{x}{x^2-1} - \frac{5}{2x^2+x-3}$

[4]

Question 2: Solve for *x*: $\frac{x^3 + 3x^2 - 5x}{x^2 + 9} = 0$

[3]



[3]

Question 5: Rationalize and simplify: $\frac{\sqrt{2+h} + \sqrt{2-h}}{h}$

[4]

Question 6: A certain line *L* has twice the slope of the line 2x + 3y = 7 and the two lines intersect at x = 2. Determine an equation for the line *L*. (For your final answer use any form of the equation of a line you wish.)

Question 7: Determine $\sin(5\pi/3) - \sec(4\pi/3)$. Express your answer as a single simplified fraction.

[3]

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

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

Question 10: Determine the domain of $f(x) = \frac{x}{3 - \sqrt{x - 2}}$.

Question 11: Evaluate and simplify the difference quotient $\frac{f(a+h) - f(a)}{h}$ where $f(x) = \frac{1}{x}$.

[4]

Question 12: A sphere (or ball) of radius r has volume $V = 4\pi r^3/3$ and surface area $S = 4\pi r^2$. Express the surface area as a function of the volume.

Question 13: Evaluate the following limits, if they exist:

(a)
$$\lim_{x \to -1} \frac{x-1}{x\sqrt{x^2+8}}$$

(b)
$$\lim_{x\to 2} \frac{x^2-4}{x^2+4x-12}$$

(c)
$$\lim_{h \to 0} \frac{\frac{1}{(3+h)^2} - \frac{1}{9}}{h}$$

(d)
$$\lim_{x \to 2} \frac{x-2}{\sqrt{x}-\sqrt{4-x}}$$

[2]

[2]

[3]