ALGEBRA

1. (2 pts) Solve for $x$: $x^2 + 5x - 5 = 9$

2. (2 pts) Solve for $x$: $\frac{2}{x - 1} + x = 2x$

TRIG - Review sections 1.4 and 1.5 in your textbook to answer questions 3-5.

3. (6 pts) Sketch a graph for each. Label the scale on both axes and identify any asymptotes.

(a) $y = \cos x$

(b) $y = \sin 2x$

(c) $y = \arctan x$

4. (5 pts) Evaluate exactly - no calculators.

(a) $\sin \left(\frac{\pi}{6}\right)$

(b) $\cos \left(\frac{2\pi}{3}\right)$

(c) $\sin \left(\frac{5\pi}{3}\right)$

(d) $\tan \left(\frac{\pi}{4}\right)$

(e) $\arctan(1)$

5. (4 pts) Use an appropriate triangle to simplify the expression so that no trigonometric functions remain.

$\cos(\arcsin x)$

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6. (6 pts) Differentiate.

(a) $f(x) = \tan(\sin x)$

(b) $g(x) = \sqrt{x} e^{2x}$
7. (12 pts) Evaluate. Appropriate notation is required. Show all work.

(a) \( \lim_{x \to 0} \frac{x^3 - 9x}{x} \)

(b) \( \lim_{x \to \infty} \frac{2x}{\ln(2e^x + 1)} \)

(c) \( \int \frac{x - \sqrt{x}}{\sqrt{x}} \, dx \)

(d) \( \int_{\pi/12}^{\pi/6} \cos(3x) \, dx \)

8. (3 pts) Answer the following questions using the M172 main course webpage:

(a) What are the dates of the three common hour exams? ________________________________

(b) What is the date AND time of the final exam? ________________________________

(c) Can you use a calculator (or other electronic device) during a M172 exam? ____________________