

Name _____

MTH 1000 - Precalculus

PRACTICE ADVANCED STANDING EXAM

1. Find the x and y -intercepts for the following:

$$x^2 - 1000 = y^3$$

x -int: _____ y -int: _____

2. Find the equation of the line (in $y = mx + b$ form) that passes through the following points: (2,1) and (4, 5)

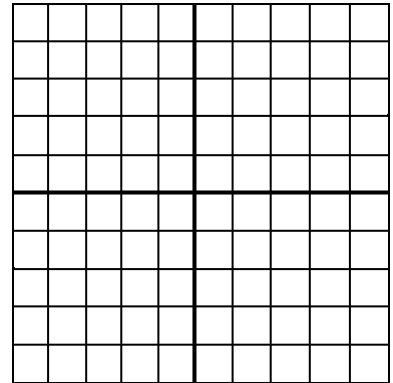
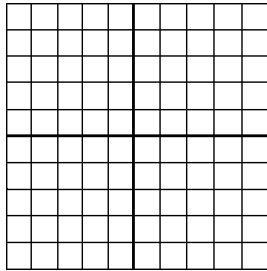
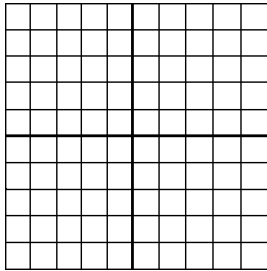
3. Give the domain of the following functions:

$$f(x) = \frac{x-9}{x^2-x-12}$$

$$g(x) = \sqrt{200-40x}$$

4. Graph the following piecewise function: $f(x) = \begin{cases} x^2 & \text{if } x < 2 \\ \frac{3}{2}x - 4 & \text{if } x \geq 2 \end{cases}$

(Hint: It may help to graph the pieces separately first.)



5. Find the coordinates of the vertex:

$$f(x) = 4x^2 - 3x + 5$$

$$f(x) = 5x^2 - 10x + 7$$

6. Divide the following polynomials and find a Quotient and a Remainder:

7. Identify the vertical and horizontal asymptotes:

$$f(x) = \frac{x + 3}{x^2 - 4}$$

$$g(x) = \frac{x^2 + 3}{x^2 - 12x + 35}$$

8. Solve the following Inequality:

$$\frac{2}{x - 2} < \frac{1}{x + 1}$$

9. Perform the indicated function compositions using the following formulas:

$$f(x) = x + 1$$

$$g(x) = x^2 + 5$$

$$g \circ f(x)$$

$$g \circ f \circ f(0)$$

10. Find the inverse of the following function:
[Be sure to indicate if there are any restrictions on the domain of the inverse.]

$$f(x) = \sqrt{x-2}$$

$$f^{-1}(x)$$

Domain:

11. Solve the following equations:

$$2^{x-2} = 32$$

$$\ln x = 4 - 2$$

Solve for x :

12. $\log x = 3 - \log x - 1$

13.

16.

Write an equation that describes the above graph:

[Note: The angles are in radians and there is no phase shift.]

17. Find the exact value of the given trig function:
(Note: The angles are measured in radians.)

$$\cos \cos^{-1} \frac{3}{2}$$

$$\cos^{-1} \cos \frac{4}{3}$$

$$\cos \tan^{-1} \frac{2}{3}$$

Find the exact value of the following:

19. $\sin^{-1} \cos \frac{4}{5}$ $\tan^{-1} \frac{2}{3}$

Use the following formulas to help answer the question above:

Angle Sum & Difference Formulas:

$$\sin(A \pm B) = \sin A \cos B \pm \cos A \sin B$$

$$\cos(A \pm B) = \cos A \cos B \mp \sin A \sin B$$

20. Find all solutions in the interval $[0, 2\pi)$:
[Note: The angles are measured in radians.]

$$2\sin^2 \theta - 5\sin \theta + 3 = 0$$

