

Assessment for those considering TMATH 115

Instructions for working the problems:

- You should allow yourself 90 minutes to solve the problems.
- Have plenty of scratch paper to take the test with.
- Ideally, you should plan to work the problems in one session while focused exclusively on the test problems.
- Do not use graphing tools or your calculator to create a testing environment that will accurately test your math skills.
- Turn off all screens so you can focus and so that this will be a true indication of what you can do.
- Keep a record of your results so that you can easily find the problems you did solve and those you did not.
- If you do not get the correct answer on the first try, check your work and look for errors, or start again with perhaps a different method.

Standards you should have an understanding of, to take TMATH 115

- Introduction to functions: linear, quadratic, exponential
- Logarithmic functions and their applications
- Systems of linear equations and inequalities and their applications
- Rational exponents and radicals.

Standards you will learn in TMATH 115

- Application of algebraic concepts in the precalculus setting to solve problems
- Read, interpret, identify, and generate graphs of elementary functions

- create linear, quadratic, polynomial, or exponential functions to describe common behaviors in business and the sciences
- Use properties of logarithms and exponents to answer questions
- Understand how to use trigonometry (trigonometric functions, inverse-trigonometric functions, identities, Law of Sines & Law of Cosines) to solve problems.

If you can complete all problems correctly, you have the kind of preparation necessary to do well in Math 115.

Practice Problems

1. Solve using the foil method, $f(x) = (3x-5)(4x-6)$
2. Find the slope that passes through the points $(1,-1)$ & $(3,3)$ using Figure: 1.1.

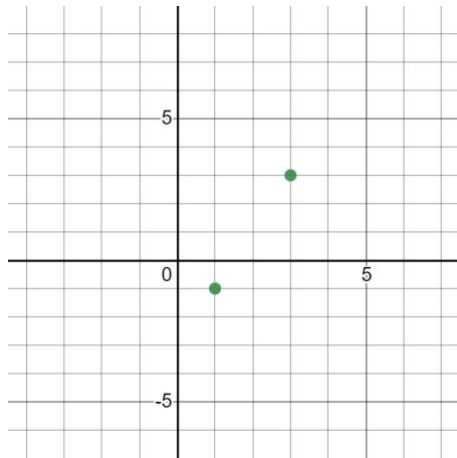
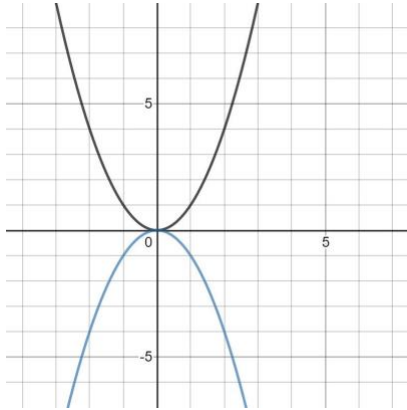


Figure: 1.1

3. Choose which axis of symmetry best represents Figure: 2.2.

Figure: 2.2.



- Y-axis Symmetry
- X-axis Symmetry
- No axis of Symmetry
- Symmetry about the Origin

4.

Which of the following expressions is equivalent to $(x + 7)(x^2 - 3x + 2)$?

- A. $x^3 - 3x^2 + 2x + 14$
- B. $x^3 + 4x^2 - 19x + 14$
- C. $x^3 - 3x + 14$
- D. $x^2 - 2x + 9$

5. Choose the answer that makes the claim true.

- a. $\log_x y = q, q^y = x$
- b. $\log_r y = y, r = y$
- c. $\log_{10} R = 21, 21^r = 10$
- d. $\log_2 x = 3, 2^3 = x$

6. Simplify the radical expression:

$$\sqrt[3]{135}$$

7. For which of the following equations is $x = 6$ the only solution?

- A. $(6x)^2 = 0$
- B. $(x - 6)^2 = 0$
- C. $(x + 6)^2 = 0$
- D. $(x - 6)(x + 6) = 0$

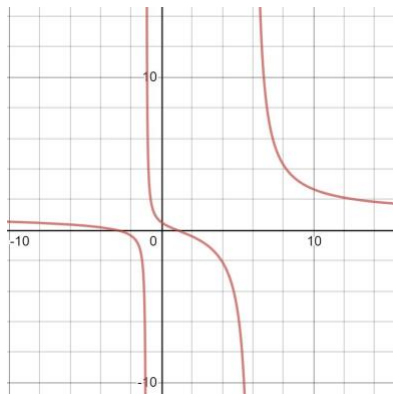
8. Identify the horizontal asymptotes of the function:

$$f(x) = (4x^2 - 5x)/(x^2 - 2x + 1)$$

9. Identify the horizontal asymptotes of the function:

$$f(x) = x^3$$

10. Identify vertical asymptotes, if any, of the graph:



11. Factor: $x^2 + 3x - 4$

12. Expand: $(2x+1)(x+3)$

13. Find the vertex of the function: $F(x) = 2x^2 + 8x - 10$

Answers

1. $f(x) = 12x^2 - 38x + 30$

2. $m=2$

3. X-Axis Symmetry

4. $x^3 - 4x^2 - 19x + 14$

5. D

6. $3\sqrt[3]{5}$

7. $(x - 6)^2 = 0$

8. Horizontal Asymptote = 4 or $Y=4$

9. No Asymptotes, not a radical expression.

10. $x = 6$ or -1 For reference: $f(x) = (4 - 2x - 3)/(x^2 - 5x - 6)$

11. $(x+4)(x-1)$

12. $2x^2 + 7x + 3$

13. $(-2, -18)$