

Do Now 1.1: Precision

- (c) 6.032×10^{-32}

(d) 26,000

(e) 0.0458

4. Round each value to three significant figures:

(a) 25.4580

(b) 235.4

(c) 26,060

(d) 0.045867

(e) π

(f) $\frac{22}{7}$

Homework 1.1: Precision, Slope

1.

Do Now 1.2: Substitution

Spicy Verify the following Pythagorean identity for all values of x and y :

$$(x^2 + y^2)^2 = (x^2 - y^2)^2 + (2xy)^2$$

Given $r(x) = x^3 - 4x^2 + 4x - 6$, find the value of $r(2)$.

What does your answer tell you about $x - 2$ as a factor of $r(x)$? Explain.

Homework 1.2: Linear Equations

2.

Do Now Quiz 1.3: Precision

1. For each of the following, round to the given precision:

(a) Tenths, $85.44580 \approx$

(b) Hundredths, $219.4951280 \approx$

(c) Thousands, $412,725.4 \approx$

2. Write down the number of significant figures of each value:

(a) 3.14159

(b) 5.40

(c) 96,100

3. Round each value to three significant figures:

(a) $289.457 \approx$

(b) $7.142856 \dots \approx$

(c) $21,060 \approx$

(d) $1.0095867 \approx$

(e) $\pi \approx$

(f) $e \approx$

Homework 1.3: Factoring Quadratic Equations, Rational Expressions

1. Solve algebraically for all values of x :

$$\sqrt{x-4} + x = 6$$

2. Over the set of integers, factor the expression $4x^3 - x^2 + 16x - 4$ completely.

3. Solve for all values of p : $\frac{3p}{p-5} - \frac{2}{p+3} = \frac{p}{p+3}$

Do Now 1.3: Factoring Quadratics

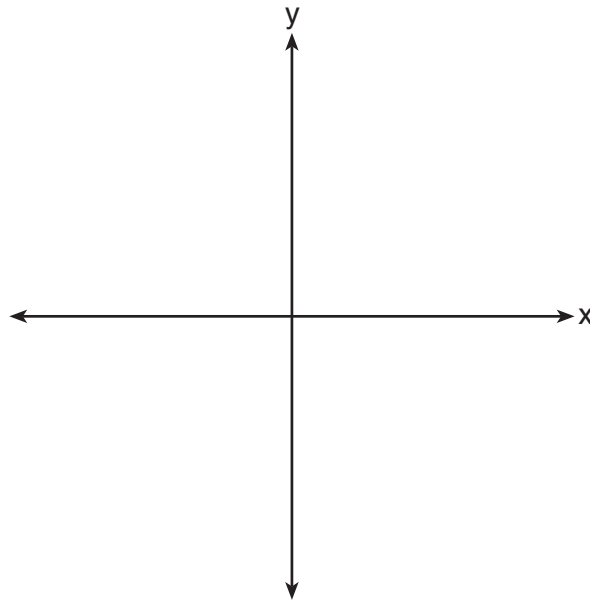
1.

Homework 1.4: Graphing Quadratic Functions

Spicy Algebraically determine whether the function $j(x) = x^4 - 3x^2 - 4$ is odd, even, or neither.

Homework 1.5: Motion Problems

1. On the axes below, sketch a possible function $p(x) = (x - a)(x - b)(x + c)$, where a , b , and c are positive, $a > b$, and $p(x)$ has a positive y -intercept of d . Label all intercepts.



Do Now 1.6: Interpreting Graphical Features

1.

Homework 1.6: Cumulative Algebra Review

1.

Do Now 1.7: Simplifying Exponents

- 1.
2. Explain how $(-8)^{\frac{4}{3}}$ can be evaluated using properties of rational exponents to result in an integer answer.
3. Write $\sqrt[3]{x} \cdot \sqrt{x}$ as a single term with a rational exponent.
4. What does $\left(\frac{-54x^9}{y^4}\right)^{\frac{2}{3}}$ equal?

Homework 1.7: Review

1. *Spicy*
2. While experimenting with her calculator, Candy creates the sequence 4, 9, 19, 39, 79,

Write a recursive formula for Candy's sequence.

Determine the eighth term in Candy's sequence.

3. Simon lost his library card and has an overdue library book. When the book was 5 days late, he owed \$2.25 to replace his library card and pay the fine for the overdue book. When the book was 21 days late, he owed \$6.25 to replace his library card and pay the fine for the overdue book.

Suppose the total amount Simon owes when the book is n days late can be determined by an arithmetic sequence. Determine a formula for a_n , the n th term of this sequence.

Use the formula to determine the amount of money, in dollars, Simon needs to pay when the book is 60 days late.

Do Now 1.8: Graphing Exponential Functions

1. In New York State, the minimum wage has grown exponentially. In 1966, the minimum wage was \$1.25 an hour and in 2015, it was \$8.75. Algebraically determine the rate of growth to the *nearest percent*.

2. Jim is looking to buy a vacation home for \$172,600 near his favorite southern beach. The formula to compute a mortgage payment, M , is $M = P \cdot \frac{r(1+r)^N}{(1+r)^N - 1}$ where P is the principal amount of the loan, r is the monthly interest rate, and N is the number of monthly payments. Jim's bank offers a monthly interest rate of 0.305% for a 15-year mortgage.

With no down payment, determine Jim's mortgage payment, rounded to the nearest dollar.

Algebraically determine and state the down payment, rounded to the nearest dollar, that Jim needs to make in order for his mortgage payment to be \$1100.

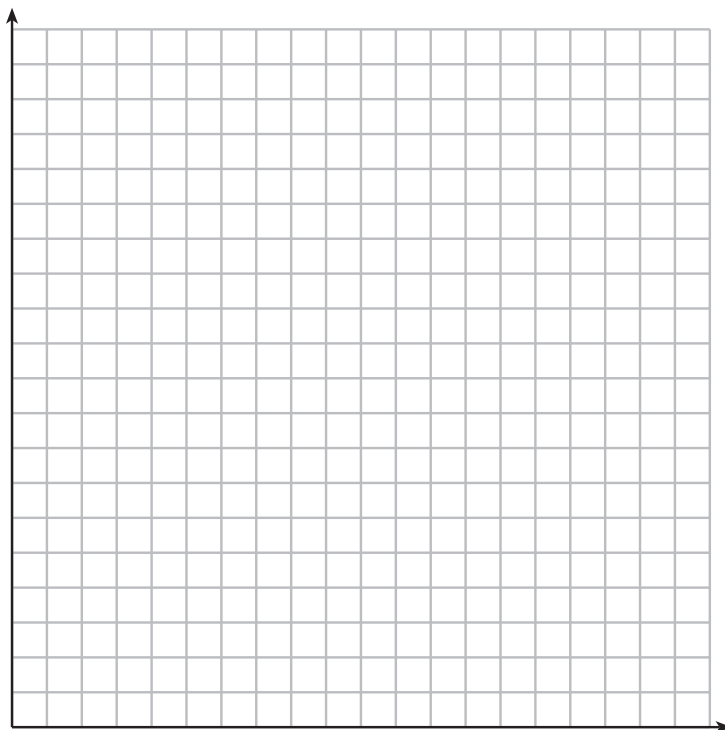
3. A radioactive substance has a mass of 140 g at 3 p.m. and 100 g at 8 p.m. Write an equation in the form $A = A_0 \left(\frac{1}{2}\right)^{\frac{t}{h}}$ that models this situation, where h is the constant representing the number of hours in the half-life, A_0 is the initial mass, and A is the mass t hours after 3 p.m.

Using this equation, solve for h , to the *nearest ten thousandth*.

Determine when the mass of the radioactive substance will be 40 g. Round your answer to the *nearest tenth of an hour*.

4. The value of a certain small passenger car based on its use in years is modeled by $V(t) = 28482.698(0.684)^t$, where $V(t)$ is the value in dollars and t is the time in years. Zach had to take out a loan to purchase the small passenger car. The function $Z(t) = 22151.327(0.778)^t$, where $Z(t)$ is measured in dollars, and t is the time in years, models the unpaid amount of Zach's loan over time.

Graph $V(t)$ and $Z(t)$ over the interval $0 \leq t \leq 5$, on the set of axes below.



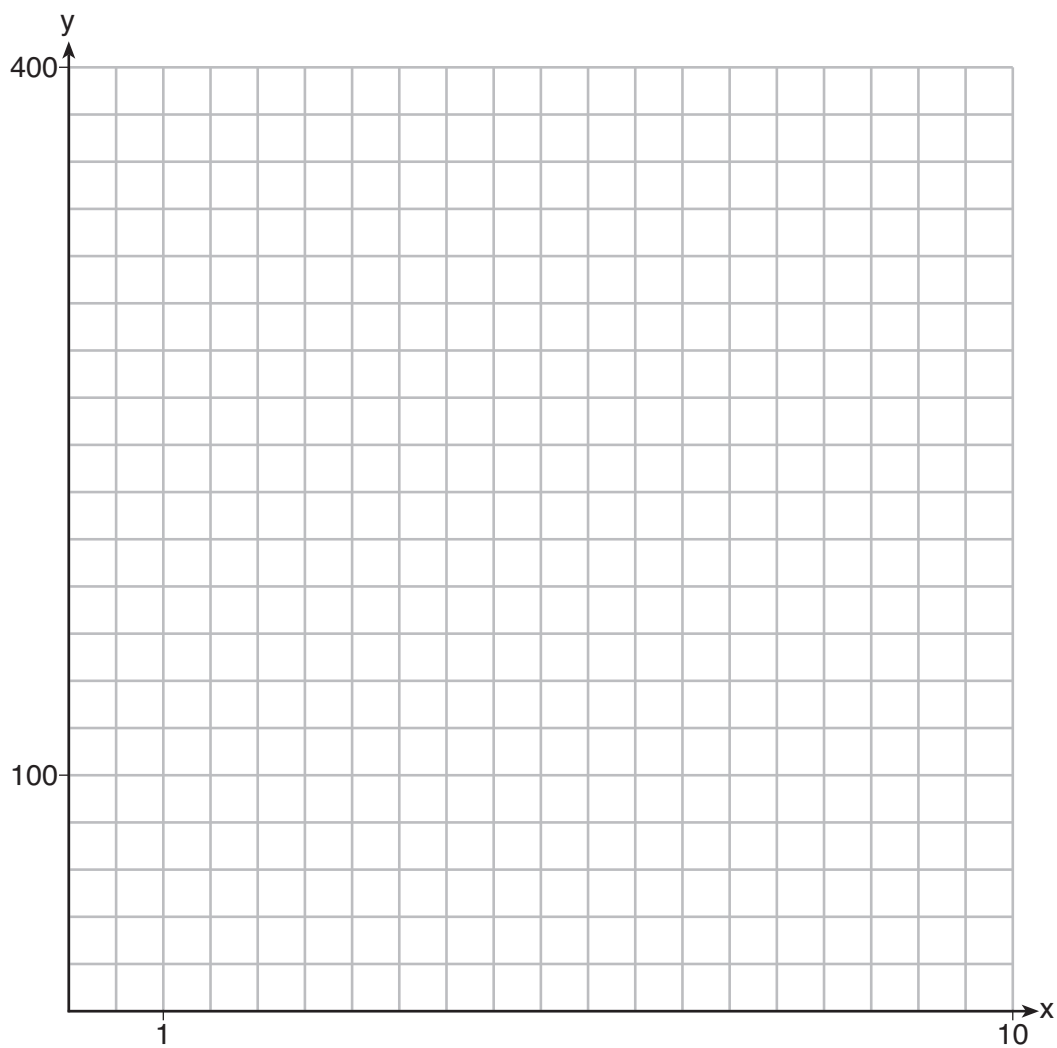
State when $V(t) = Z(t)$, to the *nearest hundredth*, and interpret its meaning in the context of the problem.

Zach takes out an insurance policy that requires him to pay a \$3000 deductible in case of a collision. Zach will cancel the collision policy when the value of his car equals his deductible. To the nearest year, how long will it take Zach to cancel this policy? Justify your answer.

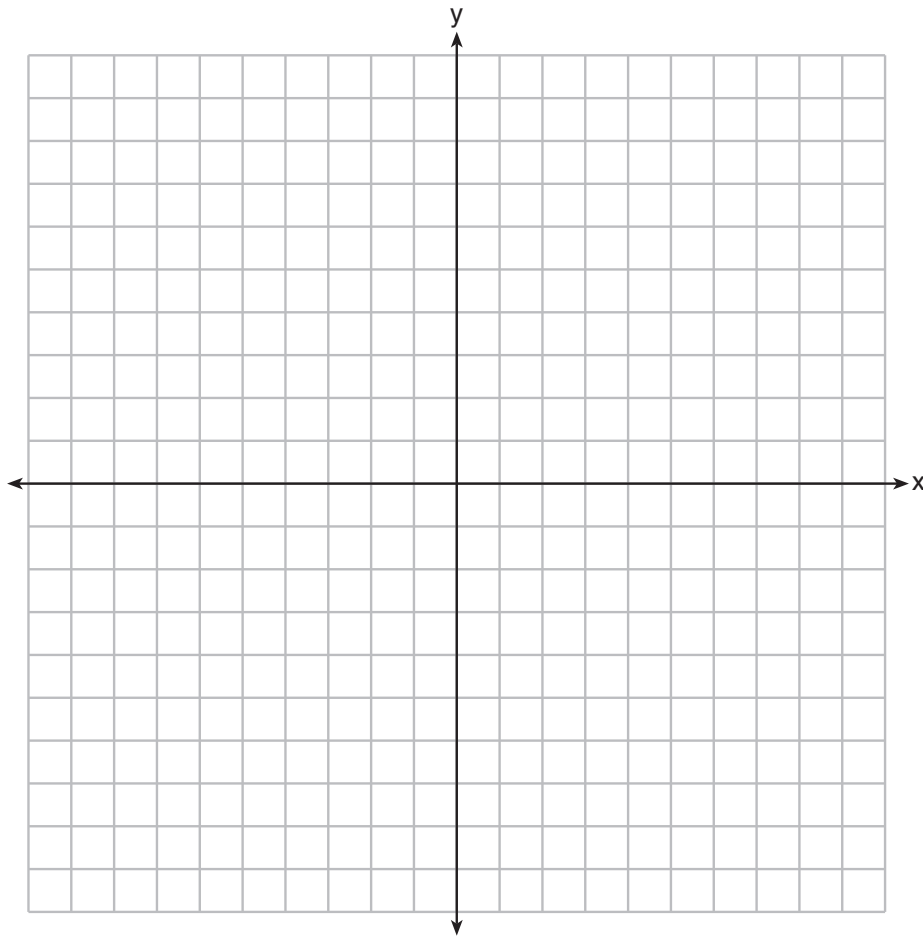
Homework 1.8: Pretest Study Questions

1.

2. Graph $y = 400(.85)^{2x} - 6$ on the set of axes below.



3. Graph $y = \log_2(x + 3) - 5$ on the set of axes below. Use an appropriate scale to include *both* intercepts.



Describe the behavior of the given function as x approaches -3 and as x approaches positive infinity.

Homework 1.10: Calculus Preparation

1.