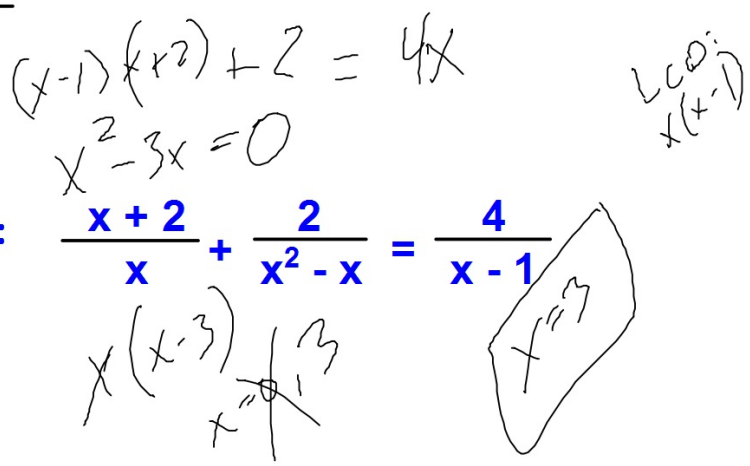
Warm up

1) Graph the following and list asymptotes, intercepts, domain.

$$\frac{(x - 4)(x + 3)}{x^2 - 9}$$

2) Solve the rational equation: $\frac{x + 2}{x} + \frac{2}{x^2 - x} = \frac{4}{x - 1}$



10. $(2x-7)(x^2-4x+4)>0$ $(7/2, \infty)$

11. $2x^3-3x^2-11x+6\geq 0$ $[-2, 1/2] \cup [3, \infty)$

HW
pg. 264

14. $2x^3-5x^2+3x<0$ $(-\infty, 0) \cup (1, 3/2)$

26. **(a)** $x=\frac{7}{2}, -1$ **(b)** $x=-5$ **(c)** $-5<x<-1$ or $x>\frac{7}{2}$

(c) $-5<x<-1$ or $x>\frac{7}{2}$ **(d)** $x<-5$ or $-1<x<\frac{7}{2}$

34. $\frac{x+2}{x^2-9}<0$ $(-\infty, -3) \cup (-2, 3)$

36. $\frac{x^2-4}{x^2+4}>0$ $(-\infty, -2) \cup (2, \infty)$

46. $\frac{(x-5)^4}{x(x+3)}\geq 0$ $(-\infty, -3) \cup (0, \infty)$

20. $\frac{4}{x-5}+\frac{3}{x+2}$

22. $\frac{3}{x+1}-\frac{2}{2x-3}$

After the quiz...

Partial Fraction:

1) $\dfrac{x+17}{2x^2+5x-3}$ $\dfrac{-2}{x+3}+\dfrac{5}{2x-1}$

[redacted]

Solve the Rational Inequality:

[redacted]

2) $\dfrac{x^2+3x-10}{x^2-6x+9}<0$ $(-5, 2)$

[redacted]

3) $\dfrac{x^3-4x}{x^2+2}\leq 0$ $(-\infty, -2] \cup [0, 2]$

Objective: Graph, describe and write exponential functions

How do you know if an exponential function represents **exponential growth?**

$b > 1$

How do you know if an exponential function represents **exponential decay?**

$0 < b < 1$

x	y
0	a

$y = a(b)^x + k$

a = START (INITIAL AMOUNT)

b = RATE

x = TIMES

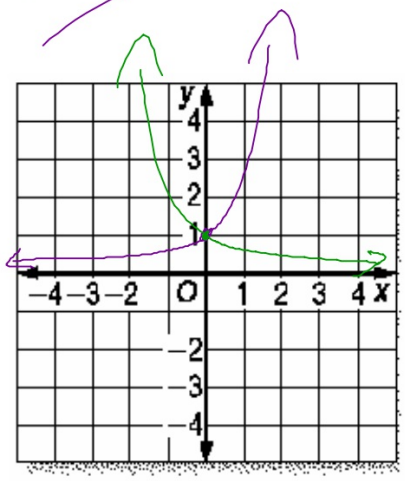
k = CONSTANT

Graph $y=2^x$.

$y=\left(\frac{1}{2}\right)^x$

x	y
-3	
-2	
-1	
0	
1	
2	
3	

★ y-int = key point



Graph Investigation

Graph the functions below and Record Changes to y-int, steepness, etc.

Graph $y=2^x$

Graph $y = 2\ (2)^x$

Graph $y = 2\ (2)^x \pm k$

Graph $y = 2\ (2)^{(x \pm c)}$

Graph $y = 2\ (2)^{-x}$

Graph $y = -2\ (2)^x$

Change other combinations of transformations and numbers to further investigate

GUIDED PRACTICE

Determine whether each function represents exponential *growth* or *decay*. Explain.

3. $y = \left(\frac{1}{7}\right)^x$ D

4. $y = \frac{1}{2}(3)^x$ G

5. $y = \frac{1}{4}\left(\frac{3}{2}\right)^x$ G

6. $y = 5(0.2)^x$ D

How to write the equation of an exponential function given the y-intercept and a point...

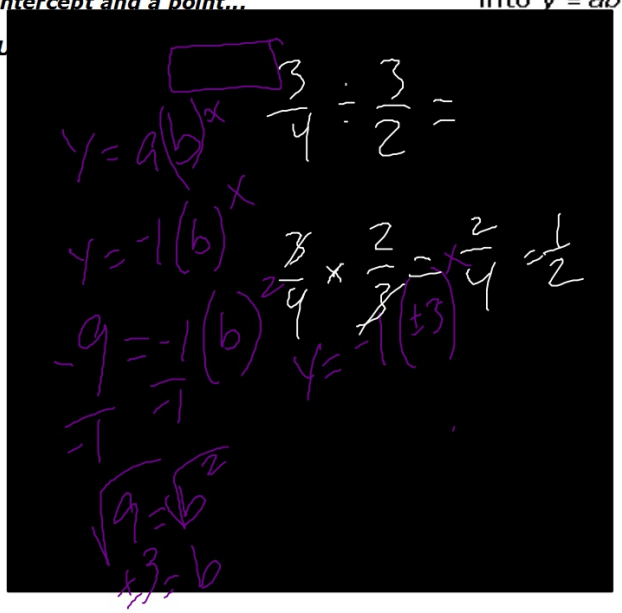
STEPS:

1. Substitute the values of (0, a) and (x, y) into $y = ab^x$.
2. Solve for b.
3. Substitute values of a and b into $y = ab^x$

Find the equation for f(x)

Table 3.6 Values for Two Exponential Functions

x	$f(x)$
−2	6
−1	3
0	3/2
1	3/4
2	3/8

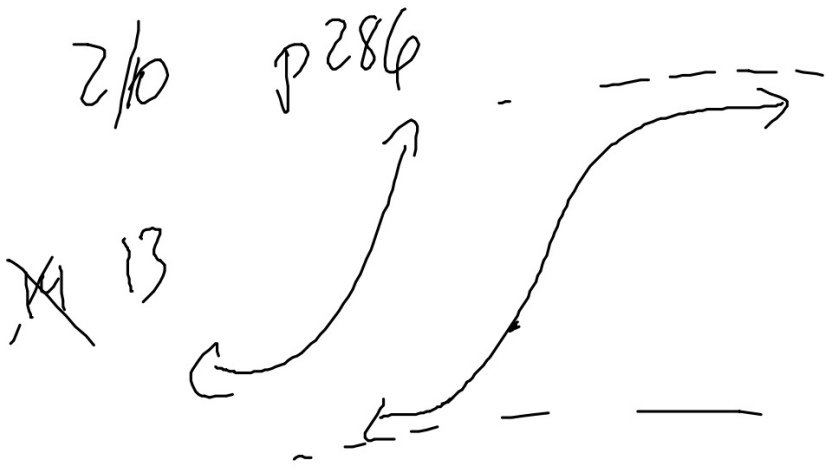


$y = \frac{3}{2}(b)^x$

$\frac{3}{4} = \frac{3}{2}(b)^1$

$\frac{3}{4} \div \frac{3}{2}$

$y = \frac{3}{2}\left(\frac{1}{2}\right)^x$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p 286
13