Slide 1:

Exponential Functions (7.1)   *p342*   *day 1*

Is love a noun or a verb?

Love is a decision

Slide 2:

Exponential Functions (7.1)   *p342*   *day 1*

I invested $50 per week starting when I was 23. I'll continue to age 60.

I averaged 10% interest.

For how many total weeks did I invest? 37 years × 52 weeks

1924

How much will I have invested by the time I am 60?

1924 × 50 $96 200

How much money will I have when I am 60?

$1,021,900

$50 Per Week for 37 Years

Slide 3:

Exponential Functions (7.1)   *p342*   *day 1*

ex1: make a table of values for $y = 2^x$ and graph

$x^?$

x	y
0	1
1	2
2	4
3	8
4	16
-1	$\frac{1}{2}$
-2	$\frac{1}{4}$
-3	$\frac{1}{8}$

Slide 4:

Exponential Functions (7.1)   *p342*   *day 1*

ex2: make a table of values and graph $y = \left(\frac{1}{2}\right)^x$

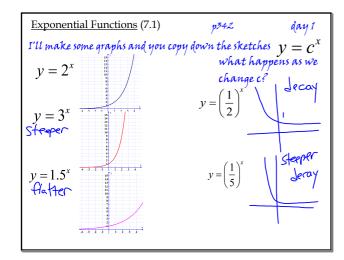| x	y
0	1
1	$\frac{1}{2}$
2	$\frac{1}{4}$
3	$\frac{1}{8}$
4	$\frac{1}{16}$
-1	2
-2	4
-3	8

Slide 5:

Exponential Functions (7.1)   *p342*   *day 1*

I'll make some graphs and you copy down the sketches $y = c^x$

what happens as we change c?

$y = 2^x$

$y = 3^x$
Steeper

$y = 1.5^x$
flatter

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

$y = \left(\frac{1}{5}\right)^x$ steeper decay

Slide 6:

Exponential Functions (7.1)   *p342*   *day 1*

summary $y = c^x$

y-intercept at 1

no x-intercept (asymptote)

steeper

as c gets bigger, the graph gets sharper

c>1 gives you growth
0<c<1 gives you decay

c is always >0   3, 4

$y = 2^x$

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

Exponential Functions (7.1)　　　*p342*　　　*day 1*

ex3: What is the rate of increase of these functions?

$$y = 1.1^x$$

10%

$$y = 1.05^x$$

5%

subtract 1
mult. by 100

$$P(t) = 2^t$$

100%

$$C(t) = 1.035^t$$

35%

1.2
1.12

Exponential Functions (7.1)　　　*p342*　　　*day 1*

ex4: Radon gas has a half-life of 15 days. Approximately how long will it take for a sample of Radon to decay to 1/30th of its original amount?

day	amount
0	1
15	$\frac{1}{2}$
30	$\frac{1}{4}$
45	$\frac{1}{8}$
60	$\frac{1}{16}$
75	$\frac{1}{32}$

∴ approx 72 days

Exponential Functions (7.1)　　　*p342*　　　*day 1*

hw: p342#7b, 9, 10, 12

make a table
- don't write
the function