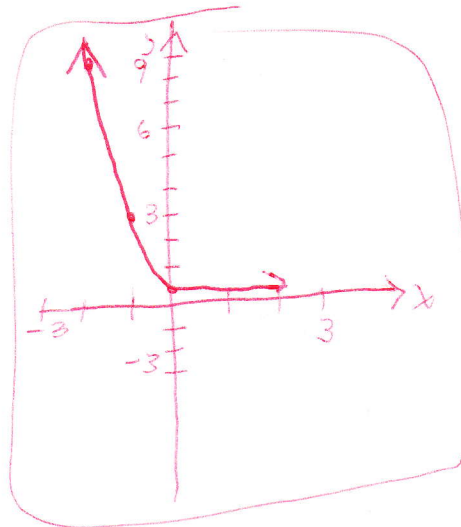


5pts 1. Use your calculator to evaluate $e^{1.48}$

4.392945681

5pts 2. Graph $y = (3)^{-x}$



5pts 3. Write in exponential form: $\log_7 49 = 2$

$7^2 = 49$

5pts 4. Write in logarithmic form: $3^6 = 729$

$\log_3 729 = 6$

5pts 5. Solve for x: $\log_5 125 = x$

$5^x = 125 \quad 5^x = 5^3 \quad x = 3$

5pts 6. Evaluate $\ln e^{2.87}$

2.87

5pts 7. Evaluate $\log_{10} 10,000$

4

5pts 8. Use logarithmic properties to write the following as a single logarithm

$2\log_5(x+3) - 4\log_5(2x+1)$

$\log_5(x+3)^2 - \log_5(2x+1)^4$

$\log_5 \left[\frac{(x+3)^2}{(2x+1)^4} \right]$

6pts 9. If $y(t) = 875e^{0.35t}$ what is y when a) $t = 0$?

$875e^0 = 875$

b) $t = 10$?

$875e^{3.5} = 28,976.02$

5pts 10. If \$250,000 is borrowed for 42 months at 6% annual interest, how much simple interest is due at the end of this time?

PRT $250000 (0.06) \left(\frac{42}{12} \right)$
 $\$52,500$

5pts 11. Write the first three terms of the sequence whose n^{th} term is $a_n = \frac{n^2 + 5}{2n + 7}$

$$a_1 = \frac{1^2 + 5}{2(1) + 7} = \frac{6}{9}$$

$$a_2 = \frac{2^2 + 5}{2(2) + 7} = \frac{9}{11}$$

$$a_3 = \frac{3^2 + 5}{2(3) + 7} = \frac{14}{13}$$

5pts 12. Write the next 5 terms of the **arithmetic sequence** 5, 18, ...

add 13

31, 44, 57, 70, 83

6pts 13. If \$250,000 is invested at 4% annual interest compounded quarterly for 15 years, how much interest will be earned at the end of this time?

$$250,000 \left(1 + \frac{0.04}{4}\right)^{15 \cdot 4} - 250,000$$

$$250,000 (1.01)^{60} - 250,000 = 454,174.17 - 250,000$$

\$204,174.17

6pts 14. How much will \$500,000 compounded continuously at 3.5% for 8 years be worth at the end of that time?

$$500,000 e^{0.035(8)}$$

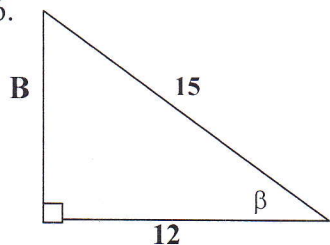
\$661,564.91

5pts 15. Write 3 additional terms of the **geometric sequence** 4, 12, ...

x3

36, 108, 324

6pts 16.



a) Find the length of side **B**

9

b) Find $\sin \beta$

9/15

c) Find β (in degrees)

$\beta = 36.87^\circ$

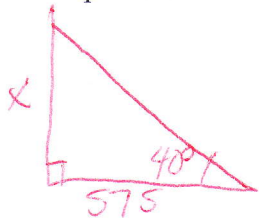
$$12^2 + B^2 = 15^2$$

$$144 + B^2 = 225$$

$$B^2 = 81$$

$$B = 9$$

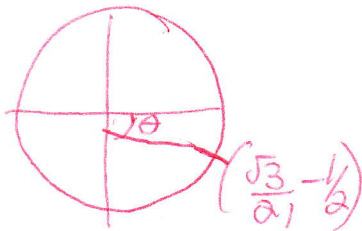
5pts 17. A person 575 feet away from the base of a building must look up at an angle of 40 degrees to see the top of the building. How tall is the building?



$$\tan 40^\circ = \frac{x}{575}$$

$$x = 575 \tan 40^\circ \approx \boxed{482.48 \text{ ft}}$$

5pts 18. Given the coordinates for a 30 degree angle are $(\sqrt{3}/2, 1/2)$ what is the sine of 330 degrees? Use the unit circle to explain your answer.



QIV
y value
 $\boxed{-1/2}$

6pts 19. a) Convert 240 degrees to radians

$$240^\circ \cdot \frac{\pi}{180^\circ} = \frac{24\pi}{18} = \boxed{\frac{4\pi}{3}}$$

b) Convert $5\pi/6$ radians to degrees

$$\frac{5\pi}{6} \cdot \frac{180^\circ}{\pi} = \frac{900^\circ}{6} = \boxed{150^\circ}$$

FORMULAS

1) $I = Prt$ 2) SOH CAH TOA 3) $a^2 + b^2 = c^2$ 4) $\pi = 180^\circ$

5) $A = Pe^{rt}$ 6) $A = P(1 + r/n)^{nt}$