

PRACTICE EXAM - MAP 4C1

This is a practice exam. It does not cover all the material in this course and should not be the only review that you do in preparation for your final exam. Your exam may contain questions that do not appear on this practice exam. Ideally, this practice exam should be done after you have completed the final exam review.

Part A: Multiple Choice

1. Two variable data is graphed where the independent variable is:
 a) Along the x-axis b) Along the y-axis c) The height of a person d) None of the above
2. Outliers:
 a) Do not conform to the pattern of the other points
 b) Affect the position of the line or curve of best fit
 c) Should be discarded
 d) A and B only
3. $\tan 45$ is:
 a) 1 b) 0.5 c) 0 d) 0.7070
4. The solution of the equation $3(5^{x+2}) = 15$ is:
 a) $x = 2$ b) $x = -2$ c) $x = 1$ d) $x = -1$

5. In which step is the error:

$$\frac{a^2b^4}{a^3b^2} \times \left(\frac{a^4}{b^2}\right)^{-3}$$

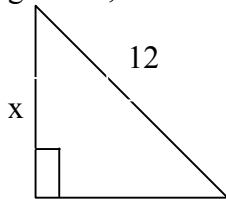
Step 1 $= \frac{a^2b^4}{a^3b^2} \times \frac{a^{-12}}{b^{-6}}$

Step 2 $= \frac{a^{-10}b^4}{a^3b^{-4}}$

Step 3 $= a^{-13}b^0$

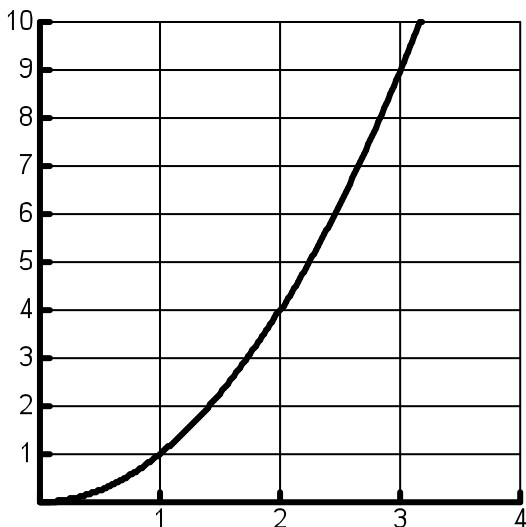
- a) step 1 b) step 2 c) step 3 d) None of these

6. The missing side x , if $\cos A = 0.5$ is:



- a) 3 b) 4 c) 5 d) 6

7. Which type of relation best fits the graph?



- a) Quadratic
 b) Exponential
 c) Linear
 d) None of these

8. Calculate the following $\frac{5^{-3}(5^2)^4}{(5^0)^3}$. The answer is:
 a) 625 b) -625 c) 1250 d) 3125
9. The present value of the ordinary annuity of monthly payments of %50 for 4 years, at 3% compounded monthly is:
 a) \$2 276.85 b) \$2 258.93 c) \$2 895.67 d) \$2 232.09

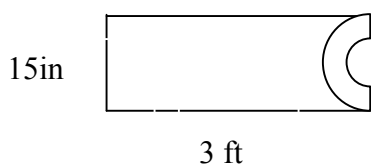
10. Susan's \$2000 investment paid her \$210 at the end of 1 year. What was the SIMPLE INTEREST RATE?
 a) 8.12% b) 10.5% c) 9.5% d) None of these

Use the following amortization table to answer questions 11 and 12.

| Payment Numbers | Monthly Payment | Interest Paid | Principal Paid | Outstanding Balance |
|-----------------|-----------------|---------------|----------------|---------------------|
| 0 | | | | \$180 000.00 |
| 1 | \$1,077.84 | \$785.09 | \$292.75 | \$179 708.52 |
| 2 | \$1,077.84 | \$783.81 | | |

11. The missing values for principal paid and outstanding balance are:
 a) \$300.00 and \$178 098.52 b) \$282.75 and \$179 415.77
 c) \$294.09 and \$178 429.82 d) \$294.03 and \$179 414.49
12. The principal borrowed for the initial mortgage is:
 a) \$179 708.52 b) \$180 000.00 c) \$100 000.00 d) None of the above
13. Which is the monthly payment on a mortgage of \$230,000 amortized over 30 years at 5.75% per year, compounded semi-monthly?
 a) \$1320.93 b) \$1332.34 c) \$1342.22 d) \$1277.78
14. Which could you use to determine the measure of an angle in an oblique triangle if you only know the lengths of all three sides?
 a) Sine Law b) Cosine Law c) Tangent Ratio d) Sine Ratio
15. When graphing two variable data, another name for the "r-value" is:
 a) Corresponding co-efficient b) Correlation co-efficient c) Line of best fit d) All of the above
16. If a line of best fit is a perfect fit to two variable data, the correlation co-efficient is:
 a) Exactly 1 or -1 b) Exactly 0 c) 0.5 d) Not needed.
17. The best way to accumulate wealth is to:
 a) Save your money by putting it into a savings account at the bank.
 b) Invest as much money as you can, at the end of each year, (A lump sum) into some sort of long term investment vehicle.
 c) Contribute to a monthly annuity as early as possible for the long term.
 d) Invest monthly into an investment vehicle that pays the minimum return.
18. Some factors to consider when determining the affordability of accommodation are:
 a) The various types of café's, restaurants and night life in the community
 b) Your personal income, long-term savings, number of your dependents, and non-discretionary expenses.
 c) Urban versus Rural community
 d) Safety, shopping and the ability to travel easily

19. The area of the following composite figure is:



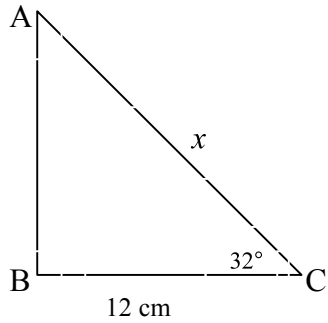
- a) About 451.6 sq. in.
 b) About 350 sq. in.
 c) About 752.3 sq. in.
 d) None of the above

20. The amount of interest saved on a \$100 000 mortgage with monthly payments, at 6% per year, compounded semi-annually, when it is amortized over 20 years instead of 25 years is:
 a) \$70 925.22 b) \$91941.99 c) \$21 016.76 d) \$32 125.52

Part B Complete solutions will be required for full marks.

1. Determine the length of the indicated side and then the unknown angles. (If necessary, to 1 decimal place).

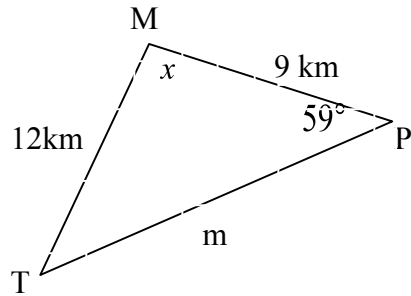
a)



Side $x =$

$\angle B =$

b)



Side $m =$

$\angle M =$

2. Simplify first, then evaluate each of the following expressions:

a) $6^2 \times 6^3$

b) $\frac{8^9}{8^6}$

c) $(4^3)^5$

d) $(\sqrt[3]{64})^2$

e) $8^{-\frac{2}{3}}$

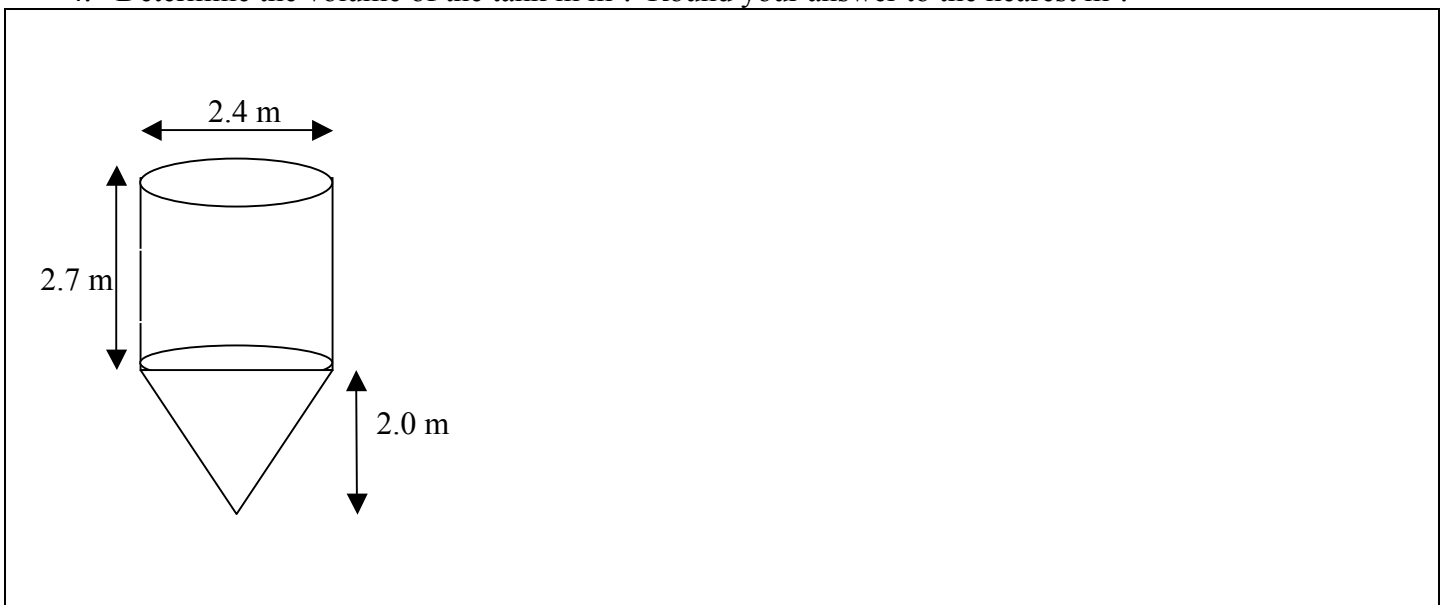
f) $(27 \div 3)^{\frac{1}{2}}$

3. Solve the exponential equations below by determining a common base.

a) $2^x = 32$

b) $4^{5x-1} = 2^{3(x+1)}$

4. Determine the volume of the tank in m^3 . Round your answer to the nearest m^3 .

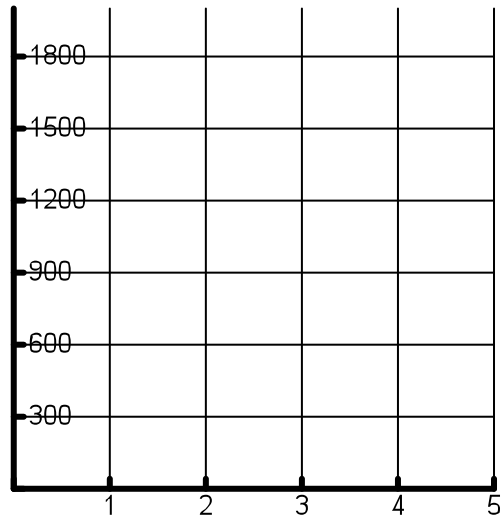


5. The value of a computer that initially costs \$1500 depreciates at a rate of \$300 per year.

- a) Construct a table of values showing the value of the computer every year for five years.
- b) Calculate the first differences.
- c) Calculate the ratio's

| Years | Value (\$) | First differences | Ratio's |
|-------|------------|-------------------|---------|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |

d) Construct a graph of value versus time. Don't forget to label it.



e) Is this relation linear, exponential, or neither. Explain.

For questions 6 – 8, you may use either the graphing calculator or the formula. In either situation, you must show your work.

- 6. After graduation from College, you want to take a vacation. What principal must be invested today in order so that you can have \$2000 when you graduate in 5 years? The interest rate is 6% per year, compounded semi-annually.
- 7. You decided that in 10 years you are going to purchase a home. To accomplish this, you will deposit \$200 per month into an ordinary annuity that earns 12% interest per year, compounded monthly. How much money will be saved after 10 years?

b) While talking to your investment manager, you realize you will need \$50,000 in order to make your down payment. Using your answer from above, determine whether you will have enough money after 10 years to afford the down payment.

- 8. The Smith family has purchased a house for \$250,000. They would like to put a down payment of 25%. Their mortgage will be for 25 years with an interest rate of 6.75%, compounded semi-annually.
 - a) How much is their down payment?
 - b) How much is their mortgage?
 - c) What will the Smith's monthly mortgage be?
 - d) How much interest will the Smith's have paid in total, after 25 years?