

ELEMENTARY CALCULUS 1 - FALL 2024 - EXAM 1A - Solutions

- T 1) The cumulative cost function $C(x)$ is a function of units produced
- T 2) Marginal cost is the cost of producing one more unit
- T 3) The revenue function $R(x)$ is a function of units sold
- F 4) If x is the number of units sold, $R(x)$ equals x times marginal cost
- F 5) Profit per unit sold is price minus cost - should be unit cost
- T 6) A linear function is of the form $f(x) = mx + b$
- F 7) A constant function is a linear function - not by our book
- T 8) 2^x is an exponential function
- F 9) There are exponential functions which are also linear - since 1^x doesn't count
- F 10) The range of a function are all the values that can be put into the formula - domain instead
- F 11) Every function has an inverse - a constant function for example
- T 12) $\log(10^x) = x$ - definition of log
- T 13) $\log(100^x) = 2x$
- F 14) $\ln(10^3) = 3$ - need common log, not exponential
- F 15) $I = Prt$ is the compound interest formula - this for simple interest (no compounding)
- F 16) $A = Pe^t$ is the continuous interest formula - need a rate in the exponent
- F 17) $\ln(4 \cdot 7) = \log 28 - \ln 28$ instead
- F 18) $\ln(32/2) = 5 - \ln 16 \neq 5$
- T 19) The profit function is given by $R(x) - C(x)$
- T 20) The slope of the revenue curve equals the price per unit
- T 21) Total cost is the sum of fixed plus variable costs
- F 22) $e^{\log 10} = 10$ - need $e^{\ln 10}$
- F 23) $\log(3^6) = 3 \log 6 - 6 \log 3$
- F 24) Step functions are continuous
- F 25) $\ln(\sqrt{3}) = 2/3 - \frac{\ln 3}{2}$ instead