1.   **–/2.5 points**   **My Notes**   **Ask Your Teacher**

Write the equations in logarithmic form.

(a) $512 = 8^3$

ᴐuldn't load plug-i

(b) $36 = \left(\dfrac{1}{6}\right)^{-2}$

ᴐuldn't load plug-i

(c) $a = b^c$

ᴐuldn't load plug-i

2.   **–/2.5 points**   **My Notes**   **Ask Your Teacher**

Use the definition of logarithm to simplify each expression.

(a) $\log_{10} 10$

(b) $\log_{10} 1,000$

(c) $\log_{10} 10^{-5}$

3.   **–/2.5 points**   **My Notes**   **Ask Your Teacher**

Solve each exponential equation. Give the exact value for x.

(a) $2^x = \dfrac{1}{4}$

$x =$ ᴐuldn't load plug-i

(b) $3^x = 6$

$x =$ ᴐuldn't load plug-i

(c) $8^x = 6.5$

$x =$ ɔuldn't load plug-i

(d) $2^x = 3$

$x =$ ɔuldn't load plug-i

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4.   **−/2.5 points**   **My Notes**   **Ask Your Teacher**

Find a simplified value for x by inspection. Do not use a calculator.

(a) $\log_9 81 = x$

$x =$ [   ]

(b) $\log_2 256 = x$

$x =$ [   ]

(c) $\log_3 27 = x$

$x =$ [   ]

(d) $\log_4 64 = x$

$x =$ [   ]

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5.   **−/2.5 points**   **My Notes**   **Ask Your Teacher**

Contract the expressions. That is, use the properties of logarithms to write each expression as a single logarithm with a coefficient of 1.

(a) $\ln 3 - 2\ln 5 + \ln 10$

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(b) $\ln 3 - 2\ln(2 + 10)$

ɔuldn't load plug-i

(c) $\ln 3 - 2(\ln 4 + \ln 8)$

ɔuldn't load plug-i

6.   **–/2.5 points**   **My Notes**   **Ask Your Teacher**

The atmospheric pressure P in pounds per square inch (psi) is given by

$$P = 14.7 \, e^{-0.21 \, a}$$

where a is the altitude above sea level (in miles). If a city has an atmospheric pressure of 11.33 psi, what is its altitude? (Recall that 1 mi = 5,280 ft. Round your answer to the nearest foot.)

[   ] ft

7.   **–/2.5 points**   **My Notes**   **Ask Your Teacher**

Find the future value, using the future value formula and a calculator. (Round your answer to the nearest cent.)

$947 at 5.5% compounded quarterly for 6 years

$ [   ]

8.   **–/2.5 points**   **My Notes**   **Ask Your Teacher**

Suppose that an insurance agent offers you a policy that will provide you with a yearly income of $50,000 in 30 years. What is the comparable salary today, assuming an inflation rate of 6% compounded annually? (Round your answer to the nearest cent.)

$ [   ]

9.   **–/2.5 points**   **My Notes**   **Ask Your Teacher**

Convert the credit card rate to the APR.

Oregon, $1\frac{3}{4}$% per month

[   ] %

10.   **–/2.5 points**   **My Notes**   **Ask Your Teacher**

Assume the car can be purchased for 0% down for 60 months (in lieu of rebate).

A car with a sticker price of $42,400 with factory and dealer rebates of $5,100

(a) Find the monthly payment if financed for 60 months at 0% APR. (Round your answer to the nearest cent.)

$ [_____]

(b) Find the monthly payment if financed at 2.5% add-on interest for 60 months. (Round your answer to the nearest cent.)

$ [_____]

(c) Use the APR approximation formula to find the APR for part (b). (Round your answer to one decimal place.)

[_____] %

(d) State whether the 0% APR or the 2.5% add-on rate should be preferred.
  ○ 0% APR
  ○ 2.5% add-on rate

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11. −/2.5 points   My Notes   Ask Your Teacher

Use a calculator to evaluate an **ordinary annuity formula**

$$A = m\left[\frac{\left(1 + \frac{r}{n}\right)^{nt} - 1}{\frac{r}{n}}\right]$$

for m, r, and t (respectively). Assume monthly payments. (Round your answer to the nearest cent.)

$150; 6%; 35 yr

$A = \$$ [_____]

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12. −/2.5 points   My Notes   Ask Your Teacher

Find the monthly payment for the loan. (Round your answer to the nearest cent.)

Finance $750,000 for a warehouse with a 9.50% 30-year loan

$ [_____]