

Semester 2 Exam Practice – Exponents and Exponential Functions
(Multiple Choice 9-14) + (One Constructed Response)

C 9. Simplify. Keep your answer in exponential form.

$$12^8 * 12^3$$

- a) 12^{24}
- b) 144^{24}
- c) 12^{11}
- d) 144^{11}

D 10. Simplify.

$$(5h^5)^3$$

- a) $15h^{15}$
- b) $5h^{15}$
- c) $5h^8$
- d) $125h^{15}$

B 11. Simplify.

$$\left(\frac{x^8 y^3 z^{12}}{x^5 y^2 z^8} \right)^2$$

- a) $x^3 y z^4$
- b) $x^6 y^2 z^8$
- c) $x^{39} y^5 z^{80}$
- d) $x^{64} y^9 z^{144}$

B 12. Simplify.

$$w^{-5} - 3 - r^0$$

- a) $\frac{1}{w^5} - 3$
- b) $\frac{1}{w^5} - 4$
- c) $-w^5 - 4$
- d) $-\frac{1}{w^5} - 4$

A 13. The amount of money earned, A , at the end of n years. The amount of money, A , accrued at the end of n years when a certain amount, P , is invested at a compound annual rate, r , is given by $A = P(1 + r)^n$.

If Jayson invests \$2000 at an annual rate of 8%, how much would Jayson have after 12 years? Round your answer to the nearest whole dollar.

- a) \$5,036
- b) \$2,313,660
- c) \$2,108
- d) \$16,000

D 14. The population of a certain animal species decreases at a rate of 3.5% per year. When you began, you counted 80 of the animals in the habitat you are studying. Which function could be used to model the change in animal population, p over a time of n years.

- a) $P = 80(3.5)^n$
- b) $P = 80(1.35)^n$
- c) $P = 80(1.035)^n$
- d) $P = 80(.965)^n$

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Exponents / Exponential Functions – Sample Constructed Response:

- Given the function $y = 3(2)^x$, answer the following questions. Then graph the function.

a) What are the missing values in the function table?

x	-2	-1	0	1	2
y	3/4	3/2	3	6	12

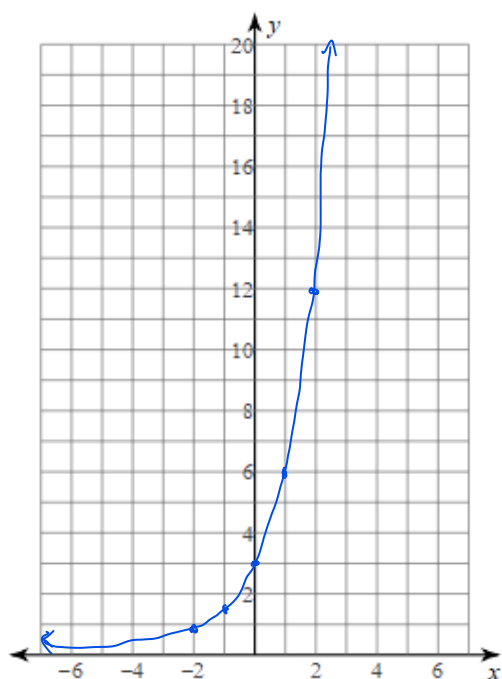
- b) Is this function an example of exponential growth or decay? By what factor?

Growth, by a factor of 2.

- c) Does this function have a vertical asymptote or a horizontal asymptote?

Horizontal Asymptote at $y=0$

d) Graph the function.



- Given the function $y = 6\left(\frac{1}{3}\right)^x$, answer the following questions. Then graph the function.

a) What are the missing values in the function table?

x	-1	0	1	2	3
y	18	6	2	2/3	2/9

- b) Is this function an example of exponential growth or decay? By what factor?

Decay by a factor of 1/3.

- c) Does this function have a vertical asymptote or a horizontal asymptote?

Horizontal Asymptote at $y=0$

d) Graph the function.

