

Pre-test: Mock Regents (multiple choice problems due tomorrow)

1. The expression $\frac{1}{2} \cdot \frac{1}{3}$ is equivalent to

- (1) $\frac{1}{6}$ (2) $\frac{1}{5}$ (3) $\frac{1}{2}$ (4) $\frac{1}{3}$

2. If $\frac{1}{2} = \frac{1}{x}$ and $\frac{1}{3} = \frac{1}{y}$, then $\frac{1}{x} + \frac{1}{y}$ equals

- (1) $\frac{1}{6}$ (2) $\frac{1}{5}$ (3) $\frac{1}{2}$ (4) $\frac{1}{3}$

3. What is the product of $\frac{1}{2} \cdot \frac{1}{3}$?

- (1)  (2)  (3)  (4) 

4. Which expression is equivalent to $\frac{1}{2} \cdot \frac{1}{3}$?

- (1) $\frac{1}{6}$ (2) $\frac{1}{5}$ (3) $\frac{1}{2}$ (4) $\frac{1}{3}$

5. If $\frac{1}{2} = \frac{1}{x}$, then the value of $\frac{1}{x}$ is

- (1) 30 (2) 300 (3) 0.03 (4) 0.3

6. The solution of $\frac{1}{2} = \frac{1}{x}$ is

- (1) $\frac{1}{6}$ (2) $\frac{1}{5}$ (3) $\frac{1}{2}$ (4) $\frac{1}{3}$

7. Which value of k satisfies the equation $\frac{1}{2} = \frac{1}{k}$?

- (1) -1 (2) $\frac{1}{2}$ (3) -2 (4) $\frac{1}{3}$

8. What is the value of x in the equation $\frac{1}{2} = \frac{1}{x}$?

- (1) $\frac{1}{6}$ (2) $\frac{1}{5}$ (3) $\frac{1}{2}$ (4) $\frac{1}{3}$

9. The solution set of the equation $\frac{1}{2} = \frac{1}{x}$ is

- (1) $\frac{1}{6}$ (2) $\frac{1}{5}$ (3) $\frac{1}{2}$ (4) $\frac{1}{3}$

10. The graph of the equation $y = m^x$ passes through the point

- (1) $(1, m)$ (2) $(0, m)$ (3) $(m, 0)$ (4) $(m, 1)$

11. Iridium - 192 is an isotope of iridium and has a half-life of 73.83 days. If a laboratory experiment begins with 100 grams of Iridium-192, the number of grams, A , of Iridium-192 present after t days would be $A = 100 \left(\frac{1}{2} \right)^{\frac{t}{73.83}}$. Which equation approximates the amount of Iridium-192 present after t days?

- (1) $A = 100 \left(\frac{1}{2} \right)^{73.83t}$ (2) $A = 100 \left(\frac{1}{2} \right)^{\frac{t}{73.83}}$
 (3) $A = 100 \left(\frac{1}{2} \right)^{\frac{73.83}{t}}$ (4) $A = 100 \left(\frac{1}{2} \right)^{\frac{1}{73.83t}}$

12. If $x = u^2v$, which expression is equivalent to $\log x$?

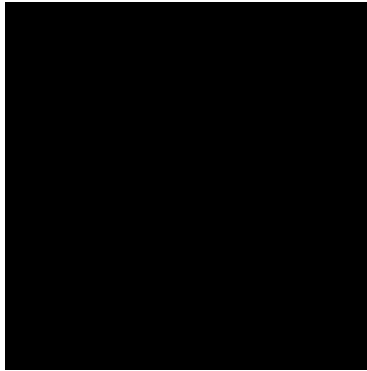
- (1) $2 \log u + \log v$ (2) $\log 2u + \log v$
 (3) $2 \log u + \log v$ (4) $2 \log u \log v$

13. If $\frac{1}{2} = \frac{1}{x}$ and $\frac{1}{3} = \frac{1}{y}$, then $\frac{1}{x} + \frac{1}{y}$ equals

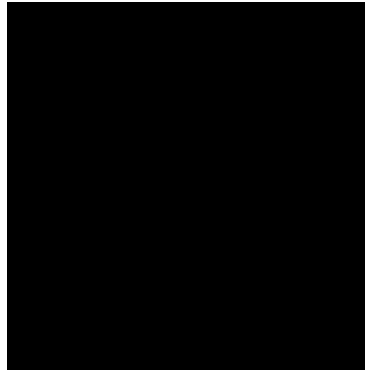
- (1) $\frac{1}{6}$ (2) $\frac{1}{5}$ (3) $\frac{1}{2}$ (4) $\frac{1}{3}$

14. Which sketch shows the inverse of $y = 2x + 3$, where $x \in \mathbb{R}$?

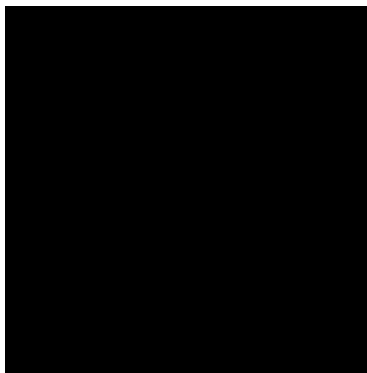
(1)



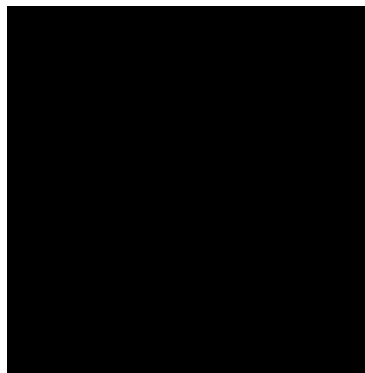
(2)



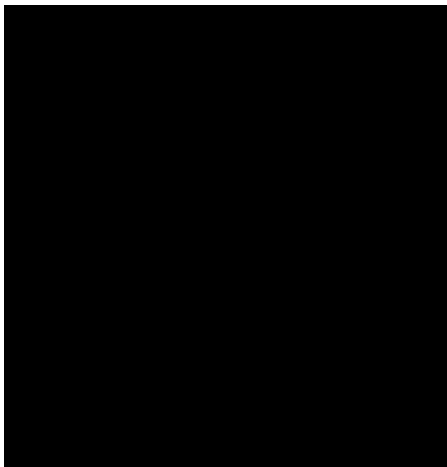
(3)



(4)



15. Which equation is represented by the accompanying graph?



(1)

(2)

(3)

(4)

16. If $y = \log x$, which expression is equivalent to $\log x$?

(1)

(2)

(3)

(4)

17. Which expression could be used to determine the value of y in the equation $2^y = 8$?

(1)

(2)

(3)

(4)

18. The expression _____ is equivalent to

(1)

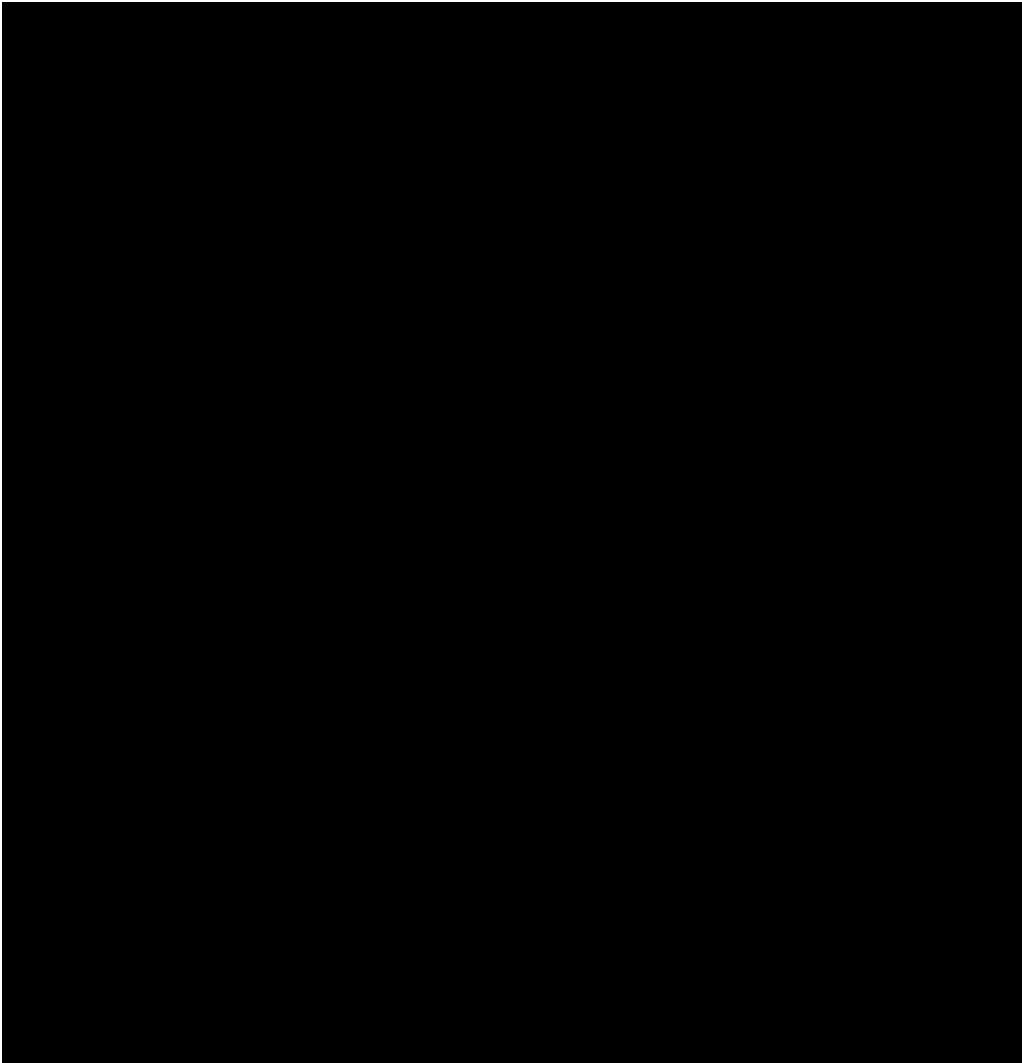
(2)

(3)

(4)

19. Explain how _____ can be evaluated using properties of rational exponents to result in an integer answer.

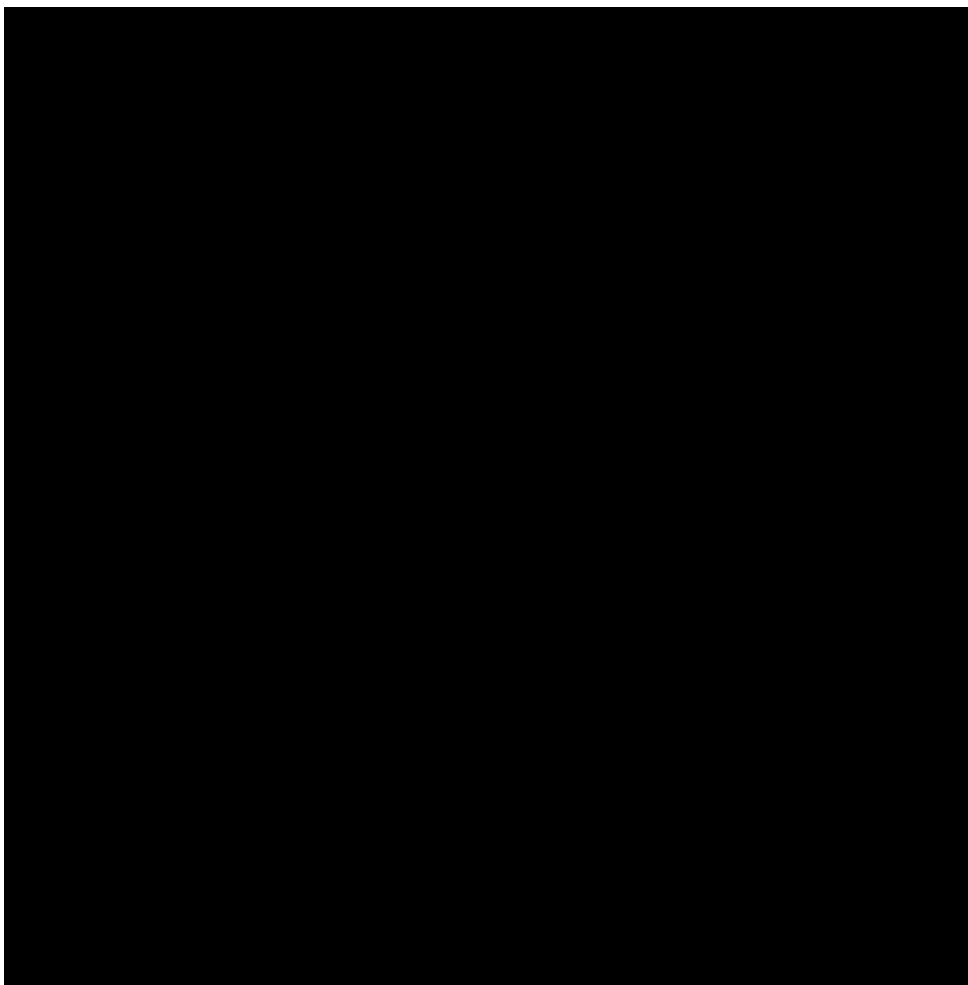
20. On the axes below, for _____, graph



21. The number of bacteria that grow in a petri dish is approximated by the function _____, where t is time, in minutes. Use this model to approximate, to the *nearest integer*, the number of bacteria present after one half-hour.

22. Solve for p algebraically:

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23. The graph of the equation _____ has an asymptote. On the grid below, sketch the graph of _____ and write the equation of this asymptote.



24. Solve algebraically for all values of x :
25. Solve algebraically for the *exact* value of x :

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26. Seth's parents gave him \$5000 to invest for his 16th birthday. He is considering two investment options. Option A will pay him 4.5% interest compounded annually. Option B will pay him 4.6% compounded quarterly.

Write a function of option A and option B that calculates the value of each account after n years.

Seth plans to use the money after he graduates from college in 6 years. Determine how much more money option B will earn than option A to the *nearest cent*.

Algebraically determine, to the *nearest tenth of a year*, how long it would take for option B to double Seth's initial investment.