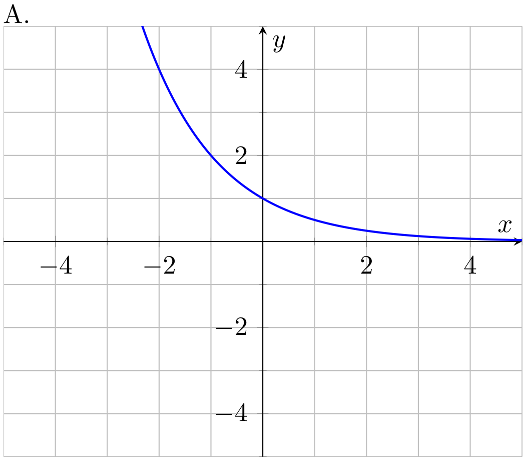
1. Complete the table of values

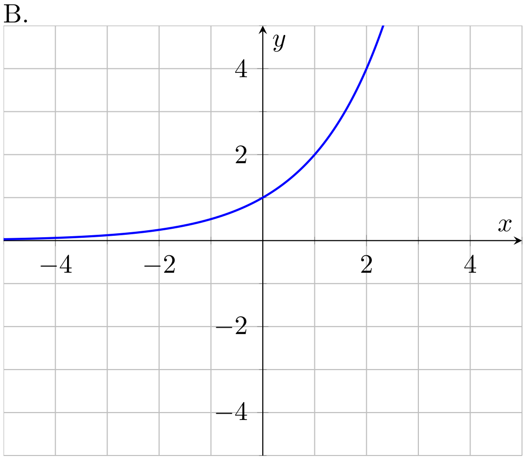
x	$f(x)$
-2	
-1	
0	
1	
2	

and use these points to sketch a graph of the function $f(x) = \left(\frac{1}{4}\right)^x$

A.



B.



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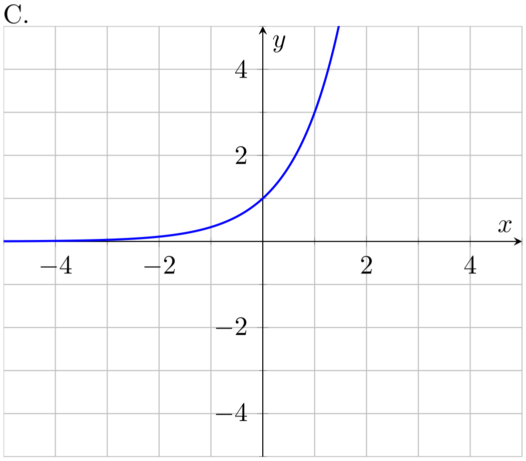
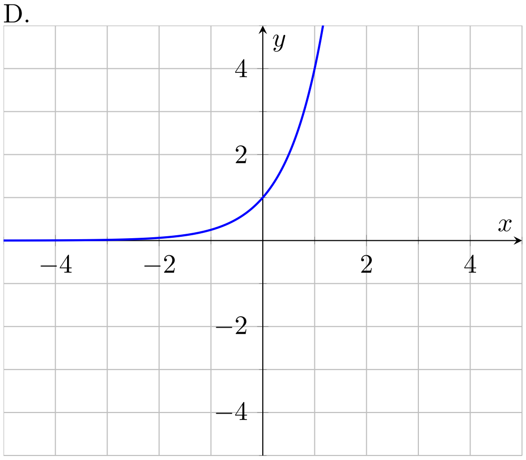
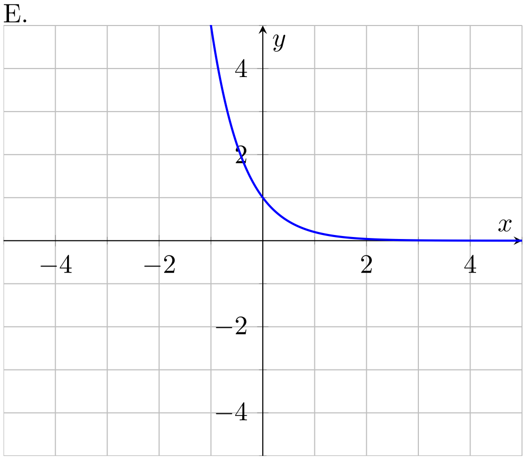
C.



D.



E.



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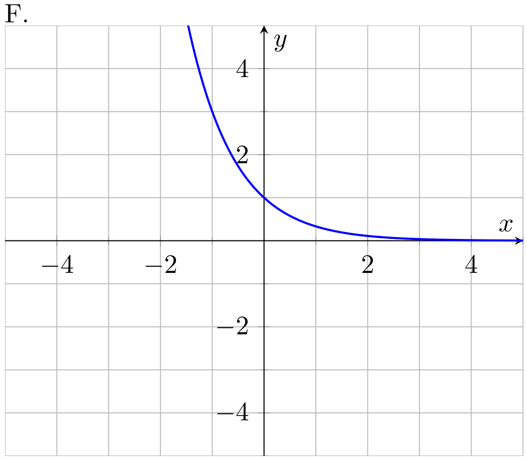
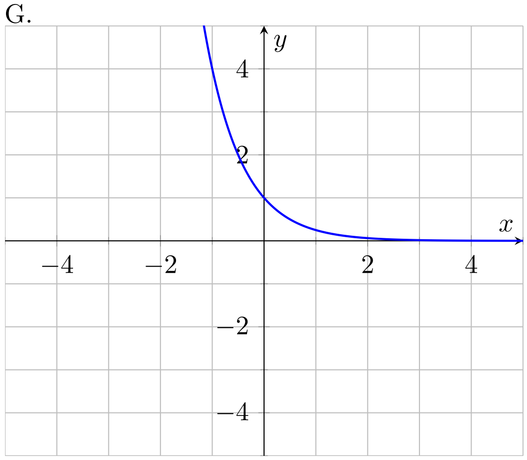
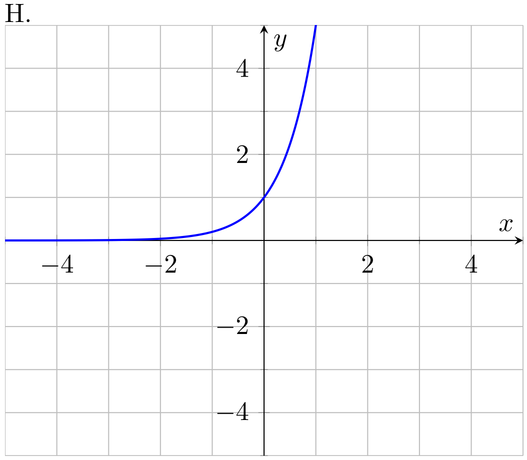
F.



G.



H.



2. Solve the equation using only pencil and paper.

$$3^{3r+6} = \sqrt[4]{27}$$

A. $r = -\frac{55}{36}$

B. $r = -\frac{17}{12}$

C. $r = -\frac{59}{36}$

D. $r = -\frac{19}{12}$

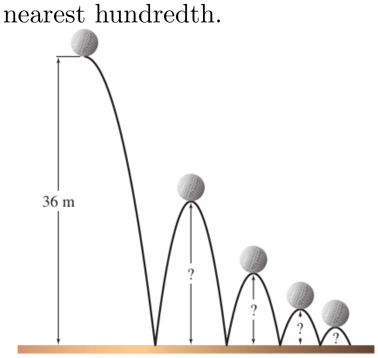
E. $r = -\frac{101}{60}$

F. $r = -\frac{3}{2}$

G. $r = -\frac{7}{4}$

H. $r = -\frac{5}{3}$

3. A golf ball is dropped from 36 m onto a surface which causes it to rebound to $\frac{1}{2}$ of its previous height on each bounce. Determine the heights of the first four bounces: h_1, h_2, h_3, and h_4. Round each height to the nearest hundredth.



A. $h_1 = 21.6$, $h_2 = 12.96$, $h_3 = 7.78$, $h_4 = 4.67$.

B. $h_1 = 18$, $h_2 = 9$, $h_3 = 4.5$, $h_4 = 2.25$.

C. $h_1 = 9$, $h_2 = 7.2$, $h_3 = 5.76$, $h_4 = 4.61$.

D. $h_1 = 9$, $h_2 = 2.25$, $h_3 = 0.56$, $h_4 = 0.14$.

E. $h_1 = 14.4$, $h_2 = 5.76$, $h_3 = 2.3$, $h_4 = 0.92$.

F. $h_1 = 14.4$, $h_2 = 2.88$, $h_3 = 0.58$, $h_4 = 0.12$.

G. $h_1 = 21.6$, $h_2 = 16.2$, $h_3 = 12.15$, $h_4 = 9.11$.

H. $h_1 = 18$, $h_2 = 12$, $h_3 = 8$, $h_4 = 5.33$.

4. Given $f(x) = 4^x$, mentally evaluate the expression: $f\left(-\frac{3}{2}\right)$

A. $f\left(-\frac{3}{2}\right)$=16

B. $f\left(-\frac{3}{2}\right)$=$\frac{1}{8}$

C. $f\left(-\frac{3}{2}\right)$=1

D. $f\left(-\frac{3}{2}\right)$=$\frac{1}{4}$

E. $f\left(-\frac{3}{2}\right)$=$\frac{1}{16}$

F. $f\left(-\frac{3}{2}\right)$=8

G. $f\left(-\frac{3}{2}\right)$=4

H. $f\left(-\frac{3}{2}\right)$=$\frac{1}{2}$

5. Solve the equation using only pencil and paper.

$$\left(\frac{3}{2}\right)^{5\eta+2} = \sqrt[3]{\frac{9}{4}}$$

A. $\eta = -\frac{7}{60}$

B. $\eta = -\frac{17}{75}$

C. $\eta = -\frac{1}{15}$

D. $\eta = -\frac{1}{6}$

E. $\eta = -\frac{2}{15}$

F. $\eta = -\frac{4}{15}$

G. $\eta = -\frac{1}{5}$

H. $\eta = -\frac{13}{60}$

6. The strontium-90 in a nuclear reactor decays continuously. If 20 mg is present initially, the amount present after t years is given by $A(t) = 20e^{-0.0248t}$. Approximate to the nearest hundredth of a milligram the amount left after 30 years.

A. There will be approximately 9.64 mg left after 30 years.

B. There will be approximately 8.67 mg left after 30 years.

C. There will be approximately 9.96 mg left after 30 years.

D. There will be approximately 8.72 mg left after 30 years.

E. There will be approximately 9.5 mg left after 30 years.

F. There will be approximately 9.11 mg left after 30 years.

G. There will be approximately 8.97 mg left after 30 years.

H. There will be approximately 9.12 mg left after 30 years.

7. Given $f(x) = 8^x$, mentally evaluate the expression: $f\,(2)$

A. $f\,(2)=\frac{1}{64}$

B. $f\,(2)=64$

C. $f\,(2)=4$

D. $f\,(2)=2$

E. $f\,(2)=\frac{1}{4}$

F. $f\,(2)=\frac{1}{2}$

G. $f\,(2)=\frac{1}{8}$

H. $f\,(2)=8$

8. A nuclear chemist starts an experiment with 80 g of a radioactive material. At the end of each time period, only $\frac{1}{2}$ of the amount present at the start of the period is left. Determine the amount of this material left at the end of each of the first four time periods: a_1, a_2, a_3, and a_4

A. $a_1 = 40$, $a_2 = 26.67$, $a_3 = 17.78$, $a_4 = 11.85$.

B. $a_1 = 32$, $a_2 = 12.8$, $a_3 = 5.12$, $a_4 = 2.05$.

C. $a_1 = 48$, $a_2 = 36$, $a_3 = 27$, $a_4 = 20.25$.

D. $a_1 = 20$, $a_2 = 4$, $a_3 = 0.8$, $a_4 = 0.16$.

E. $a_1 = 48$, $a_2 = 28.8$, $a_3 = 17.28$, $a_4 = 10.37$.

F. $a_1 = 20$, $a_2 = 5$, $a_3 = 1.25$, $a_4 = 0.31$.

G. $a_1 = 32$, $a_2 = 10.67$, $a_3 = 3.56$, $a_4 = 1.19$.

H. $a_1 = 40$, $a_2 = 20$, $a_3 = 10$, $a_4 = 5$.