

Question 1

mode Multiple Choice
text What is the capital of California?
choice San Francisco
choice Los Angeles
correct-choice Sacramento

Question 2

mode MultipleChoice
text $3 \log x - 2 \log y =$
correct-choice $\log\left(\frac{x^3}{y^2}\right)$
choice $\log(x^3y^2)$
choice $\log(3x - 2y)$
choice $\log(x^3 - y^2)$

Question 3

mode NonPermutingMultipleChoice
text Consider the function $f(x) = cx^n$. What happens to $f(x)$ as $x \rightarrow -\infty$?
correct-choice $f(x) \rightarrow \infty$
choice $f(x) \rightarrow -\infty$
choice $f(x) \rightarrow 0$
code `$n=int(2*rint(4)+3);
$c=int(-(rint(6)+2));`

Question 4

mode TrueFalse
text The equation $2x - 3y^2 = 4$ defines a function with an independent variable x .
choice True
correct-choice False

Question 5

mode TrueFalse
text The equation $ax - by^2 = c$ defines a function with an independent variable x .
choice True
correct-choice False
code `$aa=int(rint(11)+2);
$s=rint(2);
$a=int(if($s,$aa,-$aa));
$b=int(rint(11)+2);
$cc=int(rint(11)+2);
$t=rint(2);
$c=int(if($t,$cc,-$cc));`

Question 6

mode Matching

text Match the following polynomials with their factorizations:

match $x^2 - 1$

with $(x - 1)(x + 1)$

match $x^2 + 2x + 1$

with $(x + 1)^2$

match $x^2 - 2x + 1$

with $(x - 1)^2$

also $(x + 1)(x + 2)$

also $(x + 3)(x + 2)$

cols size='3'

Question 7

mode key words

text Which two scientists independently discovered inductance?

answer Michael (Faraday) and Joseph (Henry)

Question 8

mode Multipart

weighting 1,2

text Answer the following questions:

Part (a)

mode Formula

text Compute the exact value of $f'(2)$ if $f(x) = x^3 + 3 \cos(x) - 1$.

answer $12 - 3 \sin(2)$

Part (b)

mode Multipart

numbering roman

Part (i)

mode Ntuple

text Find the absolute minimum point on the graph of the function $f(x) =$

answer $\frac{1 + x^2}{x}$
 $(-1, -1/2)$

Part (ii)

mode Ntuple

text Find the absolute maximum point on the graph of the function $f(x) =$

answer $\frac{1 + x^2}{x}$
 $(1, 1/2)$

Question 9

mode MultiFormula

text What are the x -intercepts of the graph shown?

applet code='applets.grapher.Graph' width='250' height='250' archive='graphing.jar'

param name='y1' value='(x-1)(x+3)'

param name='gridLines' value='12'

param name='xMin' value='-6'

param name='xMax' value='6'

param name='yMin' value='-6'

param name='yMax' value='6'

answer 1;-3

Question 10

mode sketch

code \$a = int(rand(2,6));
 \$a2 = int(\$a*\$a);
 \$xmax = int(2*\$a);
 \$x = sqrt(2)*\$a;

text Sketch the graph of the function $y = x^2/\$a2$.

gridlines 4

axes labeled="true" background="" -\$xmax,\$xmax,-4,4

example -\$x,2 -\$a,1 0,0 \$a,1 \$x,2

check goes_through(0,0) && goes_through(-\$a,1) && goes_through(\$a,1)

check slope_at(0) == 0

check decreasing (on [-\$x,0])

check increasing (on [0,\$x])

check concave_up

Question 11

mode Matrix

text Find the transpose of the matrix

$$A = \begin{bmatrix} \$a & \$b & \$c \\ \$d & \$e & \$f \end{bmatrix}$$

size rows='3' cols='2'

size rows='3' cols='2'

answer \$a, \$d, \$b, \$e, \$c, \$f

code \$a=int(rint(19)-9);
 \$b=int(rint(19)-9);
 \$c=int(rint(19)-9);
 \$d=int(rint(19)-9);
 \$e=int(rint(19)-9);
 \$f=int(rint(19)-9);