MATH 241 MATLAB Project 4 (Quiz) Sample 1

Directions: For those questions which ask for a Matlab command simply write do the command as you would type it into Matlab. For those which give a command and request the effect simply write a sentence saying what that command would do. Point values are on the right.

Important: For all questions assume that all variables needed are defined symbolically.

1. What command would factor the expression $x^4 + x^2 - 4x$?
   
   Answer:

   [2 pt]

2. What command would solve the equation $x^3 + x^2 - 3x + 1 = 4$?
   
   Answer:

   [2 pt]

3. What command would find $\frac{d}{dx} \cos(4x^2 + e^x)$?
   
   Answer:

   [2 pt]

4. What command would find $\int \frac{\sqrt{x+1}}{x-2} \ dx$?
   
   Answer:

   [2 pt]

5. What command would find the area below the graph of $f(x) = x + x^2$ on the interval [1, 4]?
   
   Answer:

   [3 pt]

6. Assuming that $u$ and $v$ are previously defined vectors, what command would find a vector perpendicular to both?
   
   Answer:

   [2 pt]

7. What command would plot the surface $f(x, y) = xe^{-xy}$?
   
   Answer:

   [2 pt]
8. What command would plot the vector-valued function \( \vec{r}(t) = t^2 \hat{i} + \sin t \hat{j} + t \hat{k} \) on \([0, 3]\)?

Answer:

9. What command would find \( \int_0^\pi \int_0^{\sin t} r^2 \tan^2(t) \, dr \, dt \)?

Answer:

10. What would the following command pair do?

\[
[x, y]=\text{meshgrid}(-5:1:5, -5:1:5);
quiver(x, y, y/5, -x/5, 0);
\]

Answer:

11. What would the following command pair do?

\[
f=\text{inline}('x+e^x=10')
fzero(f, 1)
\]

Answer:

12. What would the command \( \text{int}(x^2, x, 0, 2) \) give for output?

Answer:

\[
\int_t^h e^x \, dx
\]