

# Exam 1 Fall 22 Key

Form	A	B
1	E	A
2	E	C
3	D	D
4	A	D
5	E	D
6	A	C
7	C	E
8	B	A
9	C	B
10	D	A
11	C	A
12	A	C

## Free Response

$$\begin{aligned}
 1. \quad &P(t) = 1 + \frac{2}{t} \\
 &Q(t) = 3e^{-t} \\
 &\mu(t) = t^2 e^t \\
 &y(t) = te^{-t} + \frac{c}{t^2 e^t} \\
 &c = 0
 \end{aligned}$$

$$\begin{aligned}
 2. \quad &n = -2 \\
 &v = y^3 \\
 &\frac{dv}{dx} + 3v = 3e^x \\
 &\mu(x) = e^{3x} \\
 &y(x) = \sqrt[3]{\frac{3}{4}e^x + Ce^{-3x}} \\
 &C = \frac{29}{4}
 \end{aligned}$$

$$\begin{aligned}
 3. \quad &\mu(x) = x \\
 &f(x, y) = x^2 y^2 + x^2 y + x^4 = C \\
 &C = 13
 \end{aligned}$$

$$4. \quad y = \sqrt{x^2(2x^2 - 1)}$$