Use substitution to find the following integrals. State clearly what your substitution is. Show all steps.

$$1. \qquad \int \frac{e^{\sqrt{x}}}{\sqrt{x}} \, dx \ =$$

2.
$$\int_0^4 \frac{2x}{x^2 + 1} dx =$$

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Use substitution to find the following integrals. State clearly what your substitution is. Show all steps.

1.
$$\int (x^6 - 3x^2)^4 (x^5 - x) dx =$$

2.
$$\int_{\ln(\pi/4)}^{\ln(\pi/2)} e^x \cos(e^x) \ dx =$$

Use substitution to find the following integrals. State clearly what your substitution is. Show all steps.

1.
$$\int (3x+2)^{20} dx =$$

2.
$$\int_0^{\pi/2} \frac{\sin(x)}{2 - \cos(x)} dx =$$

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Use substitution to find the following integrals. State clearly what your substitution is. Show all steps.

1.
$$\int x^3 (x^4 + 16)^6 dx =$$

2.
$$\int_{0}^{\sqrt{\pi/3}} \sin(x^2) 2x \, dx =$$