

1. What technique of integration would you use to evaluate each integral? (give a one sentence explanation)

a) $\int \ln(x^2 - x + 6) dx.$

Answer: Integration by parts, then partial fractions (or trig substitution)

b) $\int 2x^5 e^{x^2} dx$

Answer: Set $u = x^2$, then use the fact that $u^2 = x^4$, and integrate by parts

c) $\int \sqrt{1 - 16x^2} dx$

Answer: Use the substitution $x = 1/4 \sin \theta$

2. True or False?

a) $\lim_{x \rightarrow \infty} \frac{(3x^2 - 4x) \sin x}{x^3} = 0$

Answer: True

b) $\lim_{x \rightarrow 0} \frac{1}{x}$ does not exist.

Answer: True