

1. Multiple choice: for each of the following integrals, **circle a single method of integration** that will work. Then fill in the relevant information for **just** that method.

(a) (3 points) $\int x e^{x^2} dx$

(I) u -substitution $u = \underline{\hspace{2cm}}$ $du = \underline{\hspace{2cm}}$

(II) integration by parts $u = \underline{\hspace{2cm}}$ $dv = \underline{\hspace{2cm}}$

(III) trigonometric substitution $x = \underline{\hspace{2cm}}$ $dx = \underline{\hspace{2cm}}$

(IV) partial fraction decomposition Form of decomposition: $\underline{\hspace{4cm}}$

(b) (3 points) $\int \frac{3x}{x^2 - 5x - 6} dx$

(I) u -substitution $u = \underline{\hspace{2cm}}$ $du = \underline{\hspace{2cm}}$

(II) integration by parts $u = \underline{\hspace{2cm}}$ $dv = \underline{\hspace{2cm}}$

(III) trigonometric substitution $x = \underline{\hspace{2cm}}$ $dx = \underline{\hspace{2cm}}$

(IV) partial fraction decomposition Form of decomposition: $\underline{\hspace{4cm}}$