

Name: _____

Mark: _____ / 10

Mini-math Div 3/4: Friday, September 15, 2022 (18 minutes)

1. (1 point) Given $\int_1^7 f(x) dx = 4$, $\int_{-1}^7 f(x) dx = -3$, and $\int_1^5 f(x) dx = 6$, find $\int_{-1}^5 (2f(x) + 3) dx$
- A. -2 B. 15 C. 16 D. 17 E. 28

2. (1 point) Using the substitution $u = x^3 - 2$, $\int_{-2}^3 x^2(x^3 - 2)^3 dx$ is equal to which of the following?

A. $3 \int_{-10}^{25} u^3 du$

B. $\int_{-10}^{25} u^3 du$

C. $\frac{1}{3} \int_{-10}^{25} u^3 du$

D. $\int_{-2}^3 u^3 du$

E. $\frac{1}{3} \int_{-2}^3 u^3 du$

3. (1 point) $\int_0^1 \frac{2x-3}{x^2-5x+6} dx$ is

A. $\ln\left(\frac{16}{27}\right)$

B. $\ln 8$

C. $\ln 27$

D. $\ln 432$

E. divergent

4. (1 point) $\int_1^\infty xe^{-x^2} dx$ is

A. $-\frac{1}{e}$

B. $\frac{1}{2e}$

C. $\frac{1}{e}$

D. $\frac{2}{e}$

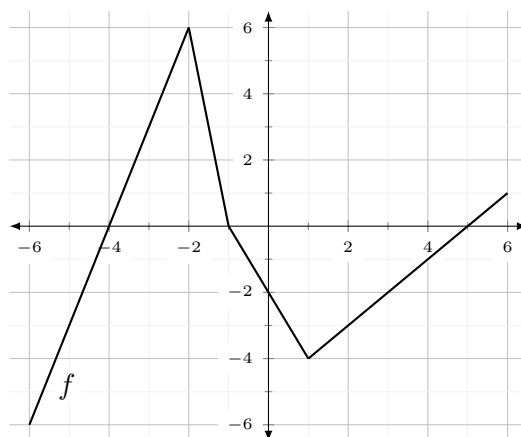
E. divergent

5. (1 point) $\int_1^8 t^{-2/3} dt =$

- A. -3 B. -1 C. $\frac{93}{160}$ D. 1 E. 3

6. (1 point) To the right is a graph of the function $f(x)$. Suppose $g(x) = \int_a^x f(t) dt$ and $g(1) = 5$. What is the minimum value of $g(x)$ on $[-6, 2]$?

- A. -8
 B. -5
 C. -4
 D. -3
 E. -2



7. (2 points) Find $\int \frac{dx}{\sqrt{-x^2 + 4x - 3}}$

8. (2 points) Find $\int (3x - 1) \sin x \, dx$