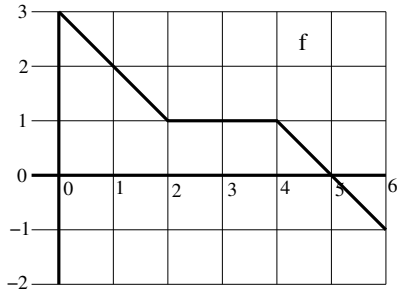
MAT 126 Fall 2020, Quiz 3

Name	ID	Section

THIS QUIZ IS WORTH 10 POINTS.
NO BOOKS, NOTES OR CALCULATORS ARE ALLOWED.

Write the correct answer in the box.

In problems 1 to 5 $F(x) = \int_0^x f(t)dt$ where f is given by the following figure:



(1) ☐ What is $F'(3)$?
(a) 1 **(b)** 2 **(c)** 3 **(d)** 3.5 **(e)** 4 **(f)** 4.5 **(g)** 5 **(h)** 5.5 **(i)** 6 **(j)** none of these

(2) ☐ What is $F(6) - F(0)$?
(a) 4 **(b)** 4.5 **(c)** 5 **(d)** 5.5 **(e)** 6 **(f)** 6.5 **(g)** 7 **(h)** 7.5 **(i)** 8 **(j)** none of these

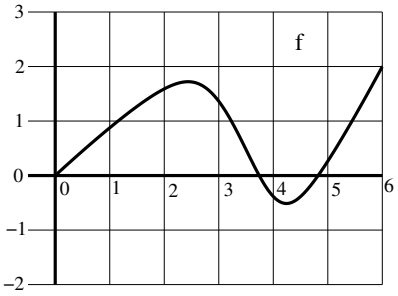
(3) ☐ At what point x in $[0, 6]$ does F take its maximum value?
(a) 0 **(b)** 1 **(c)** 2 **(d)** 3 **(e)** 4 **(f)** 5 **(g)** 6 **(h)** 7 **(i)** 8 **(j)** none of these

(4) ☐ What is the maximum value of F on $[0, 6]$?
(a) 4 **(b)** 4.5 **(c)** 5 **(d)** 5.5 **(e)** 6 **(f)** 6.5 **(g)** 7 **(h)** 7.5 **(i)** 8 **(j)** none of these

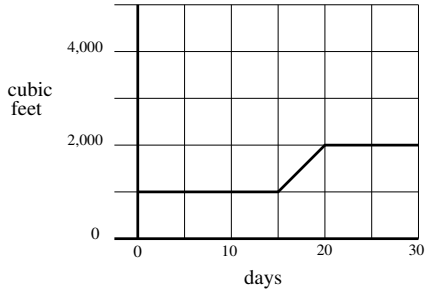
(5) ☐ If $G(x) = \int_0^{x^2} f(t)dt$, what is $G'(1)$?
(a) 0 **(b)** 1 **(c)** 2 **(d)** 3 **(e)** 4 **(f)** 5 **(g)** 6 **(h)** 7 **(i)** 8 **(j)** none of these

(6) ☐ A baseball thrown upwards at 48 ft/sec has a velocity given by $v(t) = 48 - 32t$. If it starts at height zero, what is it's height as a function of t?
(a) $h(t) = 48t^2 - 32$ **(b)** $h(t) = 48t - 16t^2$ **(c)** $h(t) = t(96 - 32t)$ **(d)** $h(t) = 96t - 16t^2$
(e) $h(t) = 96 - 32t^2$ **(f)** none of these

(7) ☐ If f is given by the figure on the right, which of the following is the largest?
(a) $\int_0^1 f(t)dt$
(b) $\int_1^2 f(t)dt$
(c) $\int_2^3 f(t)dt$
(d) $\int_3^4 f(t)dt$
(e) $\int_4^5 f(t)dt$
(f) $\int_5^6 f(t)dt$



(8) ☐ A warehouse charges its customers \$2 per day for every cubic foot of space used for storage. The figure on the right shows the storage used by one company over a month. How much will the company have to pay?
(a) \$40,000
(b) \$50,000
(c) \$55,000
(d) \$60,000
(e) \$65,000
(f) \$75,000
(g) \$85,000
(h) \$100,000
(1) \$120,000
(j) \$130,000
(k) \$140,000
(l) \$150,000
(m) \$200,000
(n) none of these



(9) ☐ Which integral gives the area of the region bounded above by $y = 2x$ and below by $y = x^2$?
(a) $\int_2^4 (2x - x^2)dx$ **(b)** $\int_0^4 (2x - x^2)dx$ **(c)** $\int_0^2 (2x - x^2)dx$ **(d)** $\int_0^2 (x^2 - 2x)dx$
(e) $\int_0^2 (x^2 - \frac{1}{3}x^3)dx$ **(f)** $\int_0^4 (\frac{1}{3}x^3 - x^2)dx$ **(g)** none of these

(10) ☐ Taking $u = x^2 + 1$ allows you to easily evaluate which of the following integrals?
(a) $\int \sin(x^2 + 1)dx$ **(b)** $\int \ln(x^2 - 1)dx$ **(c)** $\int x^2 \cos(x^2 + 1)dx$
(d) $\int \frac{x^2-1}{x^2+1}dx$ **(e)** $\int xe^{x^2+1}dx$ **(f)** $\int (x - 1)\sqrt{x^2 - 1}dx$ **(g)** $\int \sqrt{x^2 + 1}dx$

Answers: 1A, 2E, 3F, 4F, 5E, 6B, 7C, 8G, 9C, 10E