Friday, January 9

Clicker Questions

Clicker Question 1

A jet plane lands on a runway, traveling 70 metres per second. The jet continues down the runway, braking constantly, for 30 seconds before turning off the runway towards the gate. The co-pilot takes note of the speed at 5-second intervals:

time after landing (sec)	0	5	10	15	20	25	30
speed (m/sec)	70	64	54	40	28	12	10

For which of the following distances can you be sure the jet traveled at most that far in those 30 seconds?

A. $(5 \times 70 + 5 \times 64 + 5 \times 54 + 5 \times 40 + 5 \times 28 + 5 \times 12)$ m

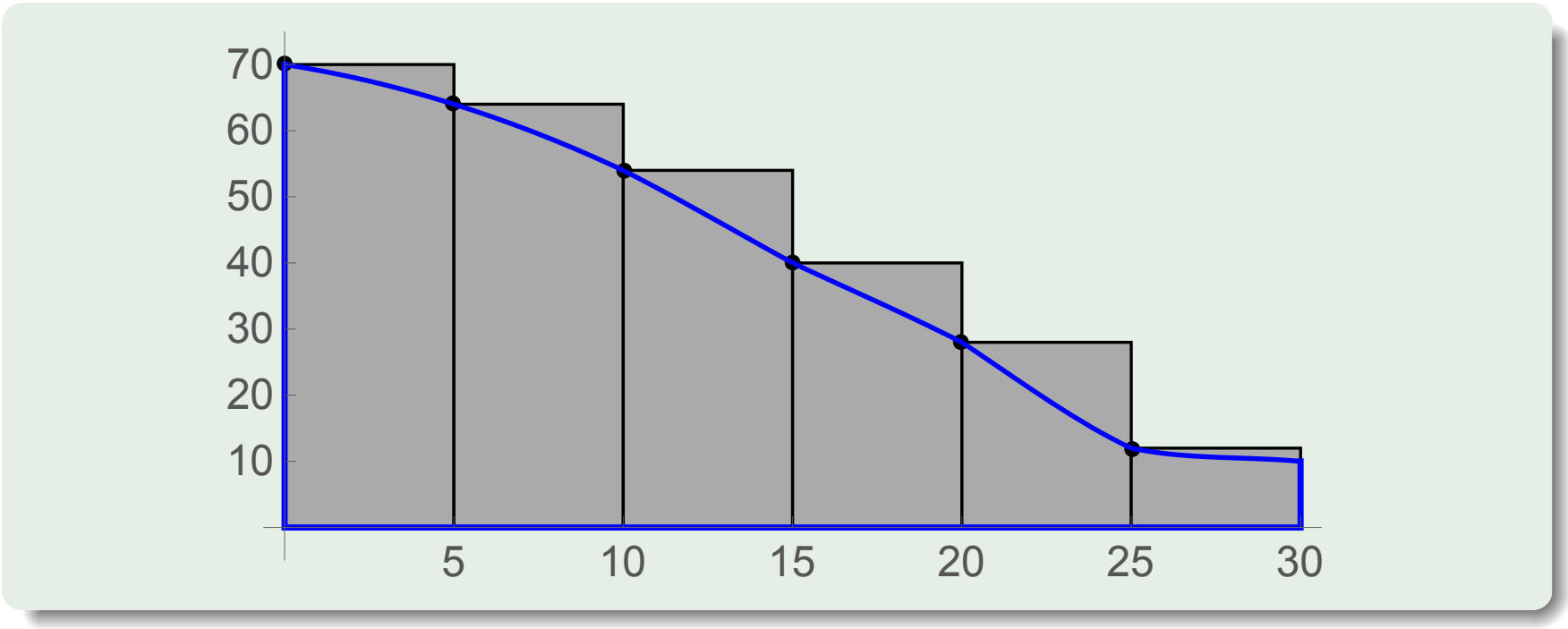
B. $(70 + 64 + 54 + 40 + 28 + 12)$ m

C. $(5 \times 64 + 5 \times 54 + 5 \times 40 + 5 \times 28 + 5 \times 12 + 5 \times 10)$ m

D. $(64 + 54 + 40 + 28 + 12 + 10)$ m

E. no way to be sure

Distance traveled: related to area under velocity graph



A. $(5 \times 70 + 5 \times 64 + 5 \times 54 + 5 \times 40 + 5 \times 28 + 5 \times 12)$ m

B. $(70 + 64 + 54 + 40 + 28 + 12)$ m

C. $(5 \times 64 + 5 \times 54 + 5 \times 40 + 5 \times 28 + 5 \times 12 + 5 \times 10)$ m

D. $(64 + 54 + 40 + 28 + 12 + 10)$ m

E. no way to be sure

Clicker Question 2

Computing a definite integral geometrically

Draw the graph of $y = 5 - x$ between $x = 0$ and $x = 3$, and then use it to compute

$$\int_0^3 (5 - x)\, dx.$$

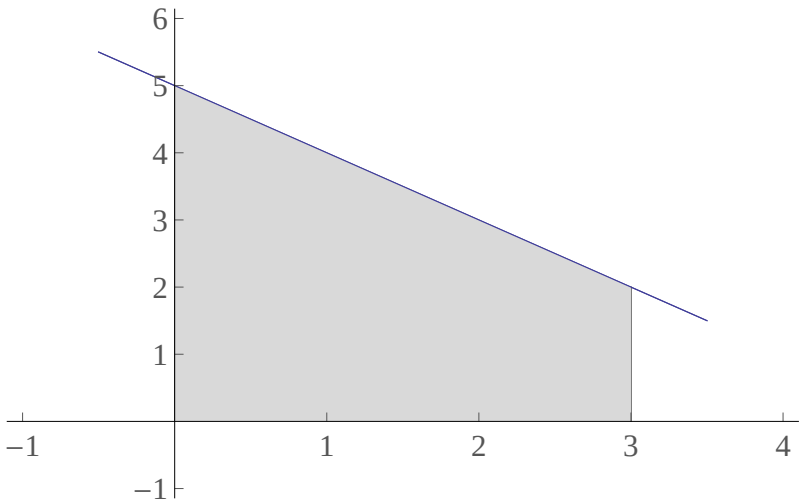
A. $9/2$

B. 15

C. 6

D. $21/2$

E. 21



Clicker Question 3

A negative integrand

What do you think the definition gives us for the definite integral

$$\int_0^3 (x-5)\,dx = \lim_{n\to\infty} \sum_{i=1}^{n} (x_i^* - 5)\Delta x?$$

A. $21/2$

B. 0

C. $-21/2$

D. $-\infty$

E. not defined