1. (50 points) An open-loop transfer function is given as,

$$G(s) = \frac{1}{s^3 + 2.0s^2 + 3.0s + 7.0}$$

which of the following PI-controllers stabilizes the system in a closed-loop unit feedback structure?

A. $F(s) = 0.5 + \frac{1.0}{s}$

B. $F(s) = -10.0 + \frac{1.0}{s}$

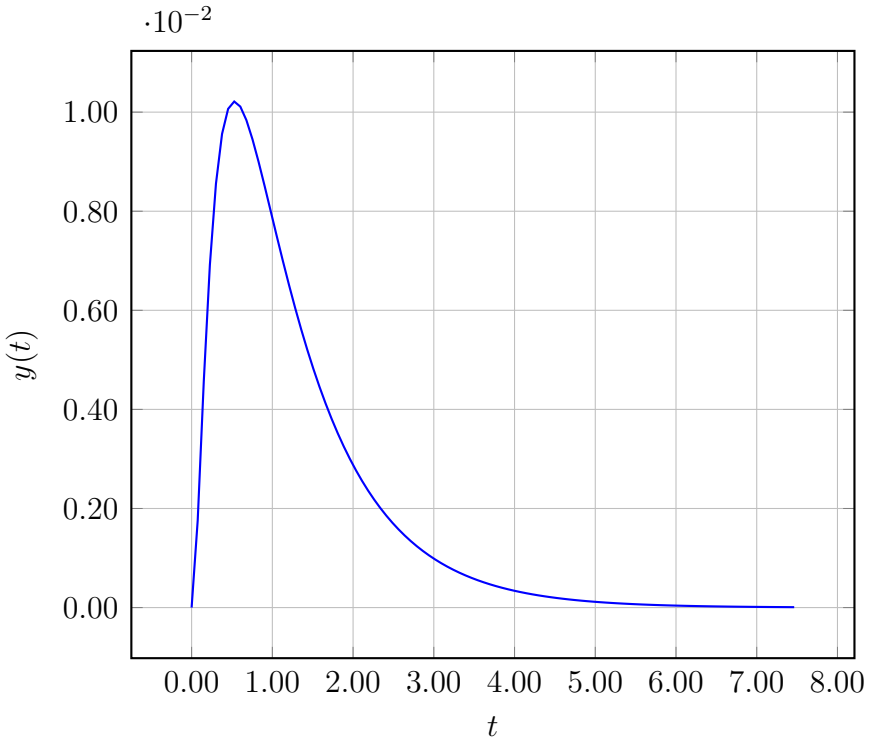
C. $F(s) = -10.0 + \frac{2.5}{s}$

D. $F(s) = 0.5 + \frac{2.5}{s}$

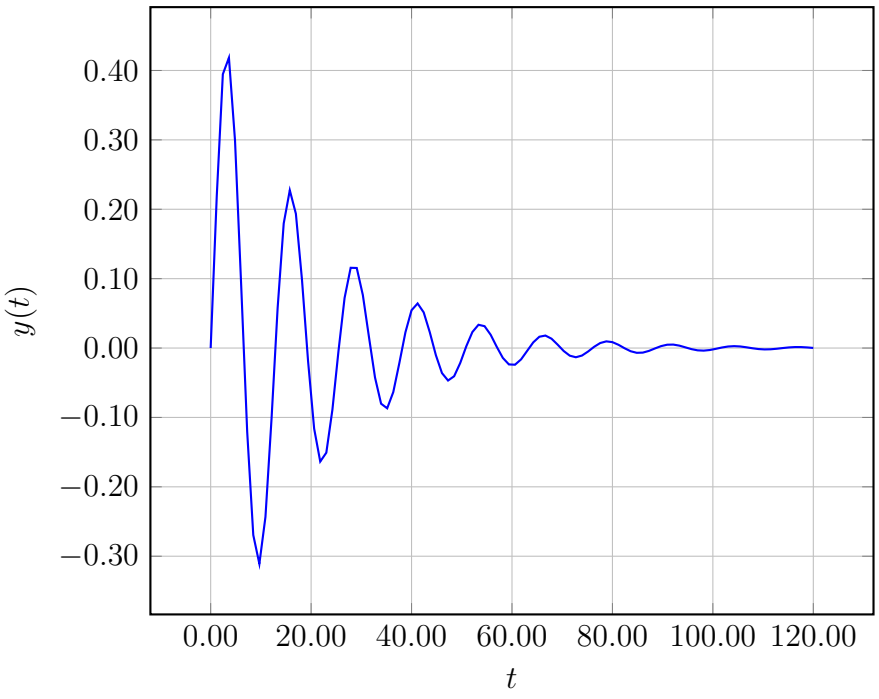
E. $F(s) = -2.5 + \frac{0.5}{s}$

2. (50 points) Which of the following does not overshoot?

A.



B.


0.40
0.30
0.20
0.10
0.00
−0.10
−0.20
−0.30
$y(t)$
0.00
20.00
40.00
60.00
80.00
100.00
120.00
t

Q	A
1	E
2	A