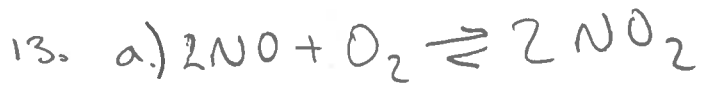


1. BLOCK TEST 1



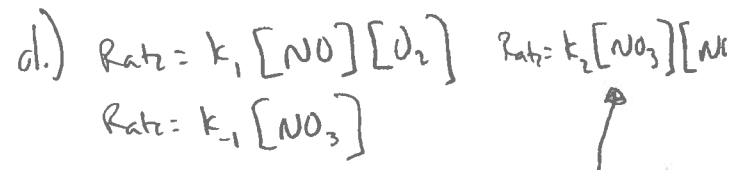
- 1. A
- 2. D
- 3. A
- 4. D
- 5. C

b) no catalyst

c) NO_3

- * 6. A
- 7. A
- 8. skip
- 9. D
- 10. A
- 11. B

note that K_c should be 5.02×10^6 in the problem



$$\frac{k_1 [NO][O_2]}{k_{-1}} = \frac{k_{-1} [NO_3]}{k_{-1}}$$

$$[NO_3] = \frac{k_1 [NO][O_2]}{k_{-1}} \quad \text{substitute}$$

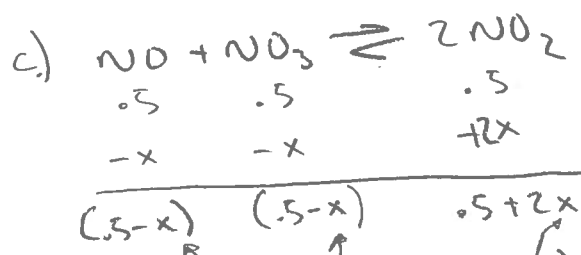
$$Rate = \left(k_2 \frac{k_1 [NO][O_2]}{k_{-1}} \right) [NO]$$

$$k_{obs} = \frac{k_2 k_1}{k_{-1}}$$

$$Rate = k_{obs} [NO]^2 [O_2]$$

12. a.) $Q = \frac{[NO_2]^2}{[NO_3][NO]} = \frac{.5^2}{.5 \times .5} = 1$
 $Q < K_c$ so reaction shifts right

b.) $K_c = \frac{[NO_2]^2}{[NO_3][NO]}$



$$\frac{(.5+2x)^2}{(.5-x)(.5-x)} = 2.5 \times 10^3$$

$$\sqrt{\frac{(.5+2x)^2}{(.5-x)^2}} = \sqrt{2.5 \times 10^3}$$

$$\frac{.5+2x}{.5-x} = 50$$

solve for x = .47

** ans: $[NO] = .5 - .47 = .03$ $[NO_3] = .5 - .47 = .03$ $[NO_2] = .5 + 2(.47) = 1.44$