

## Vectors in Euclidean Spaces Exercises

All the exercises are from Simon & Blume.

1. Exercise 10.5.
2. Exercise 10.6. (Draw 'em.)
3. Exercise 10.11.
4. Exercise 10.12.
5. Exercise 10.13.
6. Exercise 10.14.
7. Exercise 10.15.
8. Exercise 10.16.
9. Exercise 10.17. (Hint: use the definitions of the dot product, addition and scalar multiplication.)
10. Exercise 10.19. (Hint: see example 10.3.)
11. Exercise 10.20.
12. Exercise 10.22.
13. Exercise 10.23 (b) and (c). (The cross product is useful to find the nonparametric equation of a plane which goes through the points  $p$ ,  $q$  and  $r$ . We can use it to find the normal  $n$  which must be perpendicular to the two vectors  $v = q - p$  and  $u = r - p$  which lie in the plane. We would take  $n = u \times v$ . See example 10.7 - instead of solving a system of equations to find  $n$ , use the cross product.)
14. Exercise 10.28.
15. Exercise 10.32.
16. Exercise 10.33. (Nonparametric means the slope-intercept equations you are used to.)
17. Exercise 10.34.
18. Exercise 10.35.
19. Exercise 10.36.
20. Exercise 10.37.
21. Exercise 10.39.
22. Exercise 10.40