I.10 Find tan 2θ if tan θ = 3/4.
  (a) 3/2   (b) 3/4   (c) 24/5   (d) 1/5   (e) 24/7
II.3 A triangle has two sides of length 1 with 135 dg. as the
  included angle. Find the length of the other side.
    (a) $(1 + 2^{1/2})^{1/2}$ (b) $(2 + 2^{1/2})^{1/2}$ (c) $2^{1/2}$ (d) $5^{1/2}$
    (e) $(1 + 3^{1/2})^{1/2}$
II.6 An isosceles triangle has perimeter 10 and an angle of
  120 dg. Find the length of the altitude to the side opposite
  the 120 dg. angle.
    (a) $2(3)^{1/2}$ (b) $10(2 - 3^{1/2})$ (c) $10 - 5(3)^{1/2}$
    (d) $10(3^{1/2} - 1)$ (e) $3^{1/2} + 1$
II.18 Suppose θ is an angle in the first quadrant for which
  tan θ = 4. What is cos 2θ?
    (a) 15/17   (b) -15/17   (c) $1/(17)^{1/2}$ (d) 1/4   (e) -1/4
III.14 A triangle has two sides of length 3, and the
  altitude to the other side has length 2. The tangent of
  the angle between the sides of length 3 is
    (a) $-4(5)^{1/2}$ (b) $-5^{1/2}$ (c) 2/3   (d) $13^{1/2}/2$ (e) $6(5)^{1/2}$
IV.20 An isosceles triangle has two sides of length 10 with
  45 dg. as the angle between the equal sides. The third side
  has length   (a) $5(2)^{1/2}$ (b) $5(2 - 2^{1/2})$ (c) $5(3^{1/2} - 1)$
  (d) $5 + (2 + 2^{1/2})^{1/2}$ (e) $10(2 - 2^{1/2})^{1/2}$
V.20 In triangle ABC if side BC has length 10, angle C =
  45 dg., and the altitude from B to AC makes an angle of

  30 dg. with side BA, then the length of side AC is
    (a) $20/(1 + 3^{1/2})$ (b) $5(2^{1/2} + 2(3)^{1/2})$ (c) $5(2)^{1/2}(1 +$
    $1/3^{1/2})$ (d) $10(1 + 3^{1/2})/2^{1/2}$ (e) $10(3)^{1/2}/(1 + 2^{1/2})$
VI.20 A triangle has angles of 75,60, and 45 degrees, and
  its area is 10. If x is the length of the shortest side
  then x =   (a) $40(3/2)^{1/2}$ (b) $20(3)^{1/2}$ (c) $60(2)^{1/2}$
  (d) $80/3^{1/2}$ (e) $45/2^{1/2}$
VII.29 In triangle ABC with P a point on the side AC, if
  angle A equals 45 dg., angle C = 30 dg., the angle between sides
  BA and BP is 30 dg., and side AB has length 1, then the
  length of side BC is
    (a) $3^{1/2}$ (b) $2^{1/2}$ (c) 3/2   (d) $5^{1/2} - 1$ (e) $3^{1/2}/2$
VIII.21 If cos 2x = 1/4 then tan x =
  (a) 5/8   (b) 3/5   (c) 9/16   (d) 2/3   (e) 25/36
IX.8 Given an isosceles triangle with area 1 and one angle
  120 dg., the area of the triangle formed by joining the
  midpoints of the sides is
    (a) 1/2   (b) 1/3   (c) 1/4   (d) $2^{1/2}/4$ (e) $3^{1/2}/4$
IX.15 If cos (x - y) = $6^{1/2}/3$ and tan y = $2^{1/2}/2$,
  0 < x,y < $\pi/2$ then cos x =
    (a) 2/3   (b) $2^{1/2}/5$ (c) $6^{1/2}/8$ (d) $3^{1/2}/2$ (e) 1/3
X.16 Given triangle ABC, if angle A = 30 dg., angle B = 105 dg.,
  and the altitude from B to side AC has length 2, then the
  area of the triangle is approximately (a) 4.18   (b) 5.46
  (c) 4.74   (d) 6.12   (e) cannot determine from the given
  information.